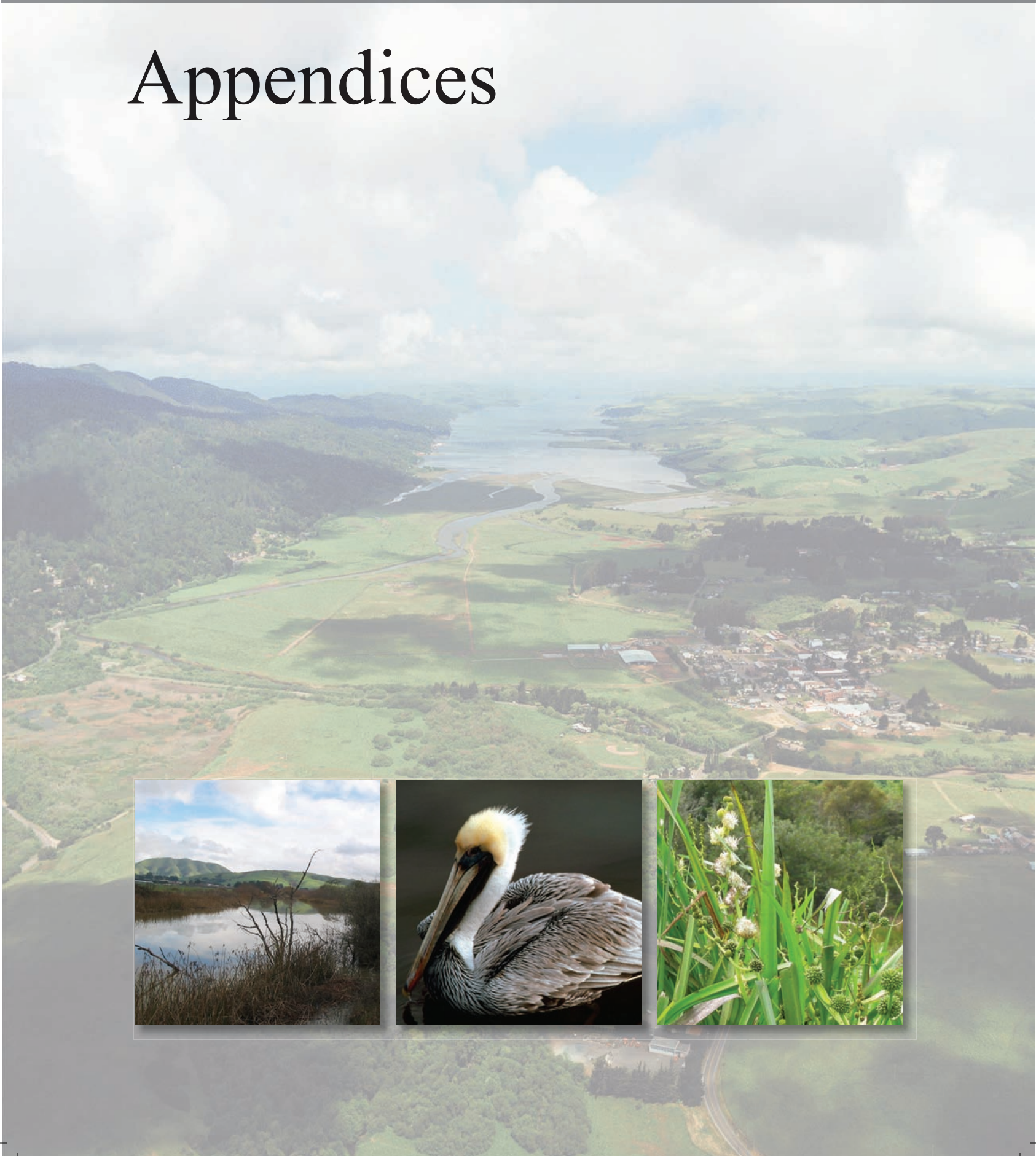


# Appendices





**APPENDIX A. LIST OF SPECIAL STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE GIACOMINI WETLAND RESTORATION PROJECT STUDY AREA AND VICINITY**

Information on species occurrences compiled from U.S. Fish and Wildlife Service Endangered and Threatened Species List (May 2005; Marin County); California Natural Diversity Database (NDDDB; 2005; Inverness, Tomales, and Point Reyes NE quadrangles), Point Reyes National Seashore rare plant database (PORE), and CNPS (2005; Inventory of rare and endangered vascular plants of California). BF Habitat Categories present in project area.

Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Abronia umbellata</i> ssp. <i>brevifolia</i>	pink sand-verbena	1B	Disturbed sandy areas; coastal dunes and <b>scrub</b> ; <100 m.	Yes	No	Present in Seashore (PORE).
<i>Agrostis blasdalei</i>	Blasdale's bent grass	SacFW SSC; 1B	Coastal dunes, prairie, bluffs, and <b>scrub</b> .	Yes	No	Known from fewer than 15 occurrences (CNPS 2005). Present in Seashore (PORE).
<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Sonoma alopecurus	FE; 1B	<b>Freshwater marshes and swamps; riparian scrub; wet meadows.</b>	Yes	No	Known from fewer than ten occurrences (CNPS 2005). Mapped in marshy area of creek near Inverness Park in 1898, but not observed in that area since (NDDDB 2005). Present in coastal areas of Seashore. Jepson does not differentiate var. <i>sonomensis</i> (Hickman 1993).
<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	SacFW SSLC; 1B	Openings in broadleaf upland forest, chaparral, and cismontane woodland.	No		Found on Mt. Tam, Bolinas and San Geronimo Valley (NDDDB 2005).
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	SacFW SSLC; 1B	<b>Coastal bluff scrub; Cismontane woodland; Valley and foothill grassland</b>	Yes	No	Occurs in several locations around the county including some near the mouth of Tomales Bay (NDDDB 2005).
<i>Arabis blepharophylla</i>	coast rock cress	SacFW SSLC; 4	Coastal prairie, bluffs, and <b>scrub</b> ; broadleaved upland forest.	Yes	No	Present in Seashore (PORE).
<i>Arctostaphylos hookeri</i> ssp. <i>montana</i>	Tamalpais manzanita	SacFW SSC; 1B	Serpentine areas in chaparral and valley and foothill grassland	No		Known from fewer than 20 occurrences in the Mt. Tamalpais area (CNPS 2005).
<i>Arctostaphylos virgata</i>	Marin manzanita	SacFW SSLC; 1B	Broadleaved upland forest; closed-cone coniferous forest; chaparral; North Coast coniferous forest; on sandstone or granitic soil.	No		Known from fewer than 20 occurrences (CNPS 2005). Mapped in Bishop pine forest in several locations on Inverness Ridge (NDDDB 2005).
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>		SacFW SSLC; 1B	<b>Coastal marshes or seeps</b> ; <30 m.	Yes	No	Present in Seashore (PORE).
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	SacFW SSC; SR; 1B	Coastal prairie and <b>scrub</b> .	Yes	No	Known from fewer than 15 occurrences; some Pt. Reyes populations intermediate to <i>B. var. nanum</i> (CNPS 2005).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Boschniakia hookeri</i>	small groundcone	2	North Coast coniferous forest, usually parasitic on <i>Gaultheria saloni</i> .	No		Mapped on several places on Mt. Tamalpais (NDDDB 2005).
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	SacFW SSC; 2	<b>Mesic areas in coastal scrub and freshwater marshes.</b>	Yes	No	Known in California from fewer than 10 occurrences (CNPS 2005). Present in Seashore (PORE). Jepson does not differentiate from <i>C. stricta</i> ssp. <i>inexpansa</i> (Hickman 1993).
<i>Calochortus tiburonensis</i>	Tiburon mariposa lily	FT, ST; 1B	Serpentinite areas in valley and foothill grassland.	No		Known from only one occurrence at Ring Mountain (CNPS 2005).
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	morning-glory	SacFW SSLC; 1B	Rocky coastal scrub; <100 m.	No		Present in the Seashore (PORE). All known locations are west on Inverness Ridge. None occur in Tomales Bay.
<i>Campanula californica</i>	swamp harebell	SacFW SSC; 1B	Bogs and fens; closed-cone and North Coast coniferous forest; coastal prairie; <b>meadows; freshwater marsh.</b>	Yes	No	Mapped in several locations along the western side of Tomales Bay and Inverness Ridge (NDDDB 2005).
<i>Carex buxbaumii</i>	sedge	4	<b>Wet places; &lt; 3300 m.</b>	Yes	No	Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005). J.T. Howell (1970) records it historically occurred on Point Reyes Peninsula in <i>Marin Flora</i> .
<i>Carex leptalea</i>	flaccid sedge	2	Bogs and fens; meadows; <b>marshes and swamps.</b>	Yes	No	Historically known only from Ledum Swamp in the Seashore (NDDDB 2005). Apparently extirpated from Marin by wetland loss (CNPS 2005).
<i>Carex lyngbyei</i>	Lyngbye's sedge	2	<b>Marshes and swamps (brackish or freshwater).</b>	Yes	Yes	Found in Inverness, south of Inverness, and Stinson's Beach (NDDDB 2005). Occurs in brackish marsh along Lagunitas Creek in Project Area and just north of the Giacomini Ranch North Levee on the west near Sir Francis Drake.
<i>Castilleja affinis</i> ssp. <i>neglecta</i>	Tiburon Indian paintbrush	FE; ST; 1B	Serpentinite areas in valley and foothill grassland.	No		Known from six occurrences (CNPS 2005). Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Castilleja ambigua</i> ssp. <i>ambigua</i>	salt marsh owl's-clover	SacFW SSLC	High marsh/upland ecotone of salt marshes.	Yes	Yes	Potentially a species of regional significance (USFWS <i>in prep.</i> ). Marsh ecotype populations have declined significantly. Occurs at Tomales Bay Trail and Limantour Marshes.
<i>Castilleja ambigua</i> ssp. <i>humboldtensis</i>	Humboldt owl's-clover	SacFW SSC; 1B	Coastal salt marsh. Mid-marsh.	Yes	Yes	Known only from Humboldt and Marin counties (NDDDB 2005). Reported previously as present in a few locations on western and eastern sides of Tomales Bay, including along Tomales Bay Trail. Observed outboard of Giacomini Ranch levee and in undiked marsh north of Ranch, as well.
<i>Ceanothus gloriosus</i> var. <i>exaltatus</i>	glory brush	4	Shrubby slopes; ridges; chaparral; coniferous forest; <500 m.	No		Present in GGNRA (PORE).
<i>Ceanothus gloriosus</i> var. <i>gloriosus</i>	Point ceanothus	4	Sandy areas in coastal bluff scrub, closed-cone coniferous forest, coastal dunes, and coastal scrub.	Yes	No	Present in Seashore (PORE).
<i>Ceanothus gloriosus</i> var. <i>porrectus</i>	Mount ceanothus	SacFW SSC; 1B	Closed-cone coniferous forest; coastal prairie; coastal scrub; valley and foothill grassland.	Yes	No	Mapped in Bishop pine forest and in coastal prairie in several locations around Point Reyes (NDDB 2005) Known from fewer than 15 occurrences (CNPS 2005).
<i>Ceanothus masonii</i>	Mason's ceanothus	SacFW SSC; SR; 1B	Serpentine areas in chaparral.	No		Known from approximately five occurrences; may be a variety of <i>C. gloriosus</i> (CNPS 2005). Present in GGNRA (PORE).
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	spineflower	SacFW SSC; 1B	Sandy areas in coastal dunes, coastal prairie, and coastal scrub.	Yes	No	Present in the Seashore (PORE) north of Abbot's Lagoon (NDDB 2005). "Some plants from Point Reyes probably intermediate to var. <i>villosa</i> " (CNPS 2005). Jepson does not differentiate species into varieties (Hickman 1993).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Chorizanthe cuspidata</i> var. <i>villosa</i>	spineflower	SacFW SSC; 1B	Sandy areas in coastal dunes, coastal prairie, and <b>coastal scrub</b> .	Yes	No	Known from fewer than 10 occurrences (CNPS 2005). Present in the Seashore (PORE) in sandy soils along the Great Beach and historically present at Dillon Beach (NDDDB 2005). Jepson does not differentiate species into varieties (Hickman 1993).
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	FE; 1B	Cismontane woodland (openings); Coastal dunes; <b>Coastal scrub</b> ; sandy or gravelly substrate.	Yes	No	Present in the Seashore (PORE). Known from several locations from of Abbot's Lagoon to L Ranch and McClure's Ranch (NDDDB 2005).
<i>Chorizanthe valida</i>	Sonoma spineflower	FE; SE; 1B	Sandy areas in coastal prairie.	No		Thought extinct at one time; only known extant occurrence in Seashore (CNPS 2005; PORE).
<i>Cirsium andrewsii</i>	Franciscan thistle	1B	Sometimes serpentine areas in broadleaved upland forest and coastal bluff scrub.	No		Present in Seashore (PORE).
<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	Mount Tamalpais thistle	SacFW SSC; 1B	Serpentine seeps in broadleaved upland forest and chaparral.	No		Known from fewer than 10 occurrences on Mt. Tamalpais (CNPS 2005).
<i>Clarkia concinna</i> ssp. <i>raichei</i>	Raiche's ribbons	SacFW SSC; 1B	<b>Coastal bluff scrub</b> .	Yes	No	Species known from only one occurrence in Marin County which is near Tomales (CNPS 2005).
<i>Collinsia corymbosa</i>	round-headed chinese houses	1B	Coastal dunes.	No		Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005). May not be any occurrences currently in Marin County (CNPS 2005). Howell (1970) cites its possible presence in Marin county at Bolinas Lagoon).
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak	SacFW SSC; 1B	<b>Coastal salt marsh</b> . Higher portions of mid marsh or high marsh.	Yes	Yes	Present in several areas on the western and eastern sides of Tomales Bay. Observed in undiked marsh at end of Tomales Bay Trail and north of Giacomini Ranch.

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Cordylanthus mollis</i> <i>ssp. mollis</i>	soft bird's beak	FE; SR; 1B	Coastal salt marsh.	Yes	No	Known from fewer than 15 occurrences. Not listed as currently occurring in Marin (CNPS 2005) and has never been observed in marshes on west coast of Marin and Sonoma counties. Currently located exclusively in San Francisco Bay and Sacramento-San Joaquin Delta.
<i>Delphinium bakeri</i>	Baker's larkspur	FE; SR; 1B	Coastal scrub.	Yes	No	Known from only one occurrence east of Marshall (CNPS 2005).
<i>Delphinium luteum</i>	Yellow larkspur	FE; SR; 1B	Chaparral; Coastal prairie; Coastal scrub/rocky	Yes	No	Known from only four occurrences. Hybridizes with <i>D. nudicaule</i> (CNPS 2005). Only known populations near Valley Ford, Walker Creek, and south of town of Tomales (NDDDB 2005).
<i>Dirca occidentalis</i>	western leatherwood	SacFW SSLC; 1B	Broadleaved upland forest; chaparral; closed-cone and North coast coniferous forest; cismontane woodland; riparian scrub; riparian woodland; on brushy, mesic slopes; mostly in mixed evergreen and foothill woodland communities.	Yes	No	Mapped along Nicasio Creek, Devils Gulch and Inverness Ridge (NDDDB 2005).
<i>Elymus californicus</i>	California bottle-brush grass	4	North coast coniferous forest.	No		Present in Seashore (PORE).
<i>Erigeron supplex</i>	supple daisy	SacFW SSC; 1B	Coastal bluff scrub; coastal prairie.	Yes	No	Last known occurrence in the Seashore from 1900 near Drakes Bay. Site searched in 1983 without success. Probably extirpated (NDDDB 2005).
<i>Eriogonum luteolum</i> var <i>caninum</i>	Tiburon buckwheat	SacFW SSLC; 3	Chaparral; Coastal prairie; Valley and foothill grassland/serpentine	Yes	No	Not known from Seashore. Mapped at Carson Ridge and Tiburon (NDDDB 2005).
<i>Erysimum franciscanum</i>	San Francisco wallflower	SacFW SSC; 4	Coastal dunes; coastal scrub; often serpentine or granitic areas in valley and foothill grassland.	Yes	No	Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Fritillaria affinis</i> var. <i>tristulif</i>	fritillary	SacFW SSC; 1B	Coastal bluff scrub; <b>coastal scrub</b> ; coastal prairie; in canyon, riparian, and rock outcrop areas; often on serpentine.	Yes	No	Endemic to Marin County. Mapped in several locations in Seashore (PORE) west of Inverness Ridge and near Bolinas (NDDDB 2005). Known from fewer than 15 extant occurrences (CNPS 2005). This variety currently not recognized by Jepson Manual (June 2004).
<i>Fritillaria liliacea</i>	fragrant fritillary	SacFW SSC; 1B	Often on serpentine soils in coastal scrub, coastal prairie, and <b>valley and foothill grassland</b> .	Yes	Yes Adjacent to Study Area	Previously mapped near Nicasio Reservoir, Limantour, and east side of Tomales Bay at the eastern end of Tomales Bay Trail (NDDDB 2005).
<i>Gilia capitata</i> ssp. <i>chamissonis</i>	dune gilia	SacFW SSC; 1B	Coastal sandhills; <60 m.	No		Present in Seashore (PORE).
<i>Gilia capitata</i> ssp. <i>tomentosa</i>	woolly-headed gilia	SacFW SSC; 1B	Rocky outcrops on <b>coastal bluff scrub</b> .	Yes	No	Known from only three occurrences near Tomales and Salt Point SP. Last known occurrence in Seashore in 1934. Known from several locations along the east side of Tomales Bay along Highway 1. Intergrades with <i>G. capitata</i> ssp. <i>capitata</i> (NDDDB 2005).
<i>Gilia millefoliata</i>		SacFW SSC; 1B	Stabilized coastal dunes; <10 m.	No		Found in several locations in the Seashore (PORE) between Drakes Bay and the Great Beach.
<i>Grindelia hirsutula</i> var. <i>maritima</i>	San Francisco gumplant	SacFW SSC; 1B	Sandy, serpentine soils in coastal bluff scrub, <b>coastal scrub</b> , and <b>valley and foothill grassland</b> .	Yes	No	Present in Seashore (PORE).
<i>Hemizonia congesta</i> ssp. <i>leucocephala</i>	hayfield tarplant	3	<b>Coastal scrub; valley and foothill grassland</b> .	Yes	No	Present in Seashore (PORE). Intergrades with <i>H. congesta</i> ssp. <i>congesta</i> (CNPS 2005) and listed by Jepson Manual as synonym for that species.
<i>Hespererax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	SacFW SSC; 2	<b>Coastal bluff scrub</b> ; coastal dunes.	Yes	No	Present in Seashore (PORE).

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<i>Hesperolinon congestum</i>	Marin dwarf flax	FT; ST; 1B	Serpentine areas in chaparral and valley and foothill grassland.	No		Present in GGNRA (PORE). Known from fewer than 20 occurrences (CNPS 2005).
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	FT; SE; 1B	Often clay soils in coastal prairie and <b>valley and foothill grassland</b> .	Yes	No	Last remaining population in San Francisco Bay extirpated in 1993 (CNPS 2005).
<i>Horkelia cuneata</i> ssp. <i>sericea</i>	Kellogg's horkelia	SacFW SSC; 1B	Old dunes; coastal sandhills; gen < 200 m.	No		Historically present at Abbots Lagoon, but not seen since 1935 (NDDB 2005). Occurrence from Mt. Bruno area probably last remaining one in San Francisco Bay (CNPS 2005).
<i>Horkelia marinensis</i>	Point Reyes horkelia	SacFW SSC; 1B	Coastal dunes, prairie, and <b>scrub</b> .	Yes	No	Present in Seashore (PORE). Known from fewer than 20 occurrences (CNPS 2005).
<i>Horkelia tenuiloba</i>	thin-lobed horkelia	1B; SacFW SSLC	Broadleafed upland forest; chaparral; <b>valley and foothill grassland</b> /mesic openings, sandy	Yes	No	Species located on the east side of Bolinas Ridge and on Mt. Tamalpais (CNDB 2005).
<i>Lasthenia macrantha</i> ssp. <i>macrantha</i>	goldfields	1B; SacFW SSLC	Grasslands and dunes along immediate coast; <500 m.	No		Present in Seashore (PORE).
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tulle pea	SacFW SSC; 1B	<b>Freshwater and brackish marsh</b> .	Yes	No	Species located exclusively in San Francisco Bay and Sacramento-San Joaquin Delta. Has never been observed in marshes on west coast of Marin and Sonoma counties. Not listed as occurring in Marin County (CNPS 2005). Specimen from 1892 collected in "Tamalpais Region" in the University Herbarium at UC Berkeley.
<i>Layia carnosa</i>	beach layia	FE; SE; 1B	Coastal dunes.	No		Present in Seashore (PORE).
<i>Leptosiphon grandiflorus</i>	large-flower linanthus	4; SacFW SSLC	Coastal bluff scrub; closed-cone coniferous forest; cismontane woodland; coastal dunes; coastal prairie; <b>coastal scrub</b> ; and <b>valley and foothill grassland</b> .	Yes	No	Formerly <i>Linanthus grandiflorus</i> . Present in Seashore (PORE).

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<i>Leptosiphon rosaceus</i>	rosy linanthus	1B; SacFW SSC	Coastal bluff scrub	Yes	No	Formerly <i>Linanthus rosaceus</i> . Present in Seashore (PORE). Occurs along ocean facing coastal bluffs in the Seashore along the Great Beach, Tomales Point, and Chimney Rock.
<i>Lessingia hololeuca</i>	woolly-headed lessingia	3	Broadleafed upland forest; coastal scrub; lower montane coniferous forest; <b>valley and foothill grassland/clay</b> , serpentine	Yes	No	Mapped in east and northern Marin at Tiburon, Ignacio, and Chileno Valley areas (CNPS 2005).
<i>Lessingia micradenia</i> var. <i>micradenia</i>	Tamalpais lessingia	SacFW SSC; 1B	Usually serpentine areas in chaparral and valley and foothill grassland; often along roadsides.	No		Known only from Mt. Tamalpais (CNPS 2005).
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	SacFW SSC; SR; 1B	<b>Freshwater and brackish marshes; riparian scrub</b> ; in muddy or silty soil formed through river deposition.	Yes	No	Questionable identification of species in 1939. May have been <i>L. occidentalis</i> . Hydrology of site since altered. Presumed extirpated (NDDDB 2005).
<i>Lilium maritimum</i>	coast lily	SacFW SSC; 1B	Broadleafed upland forest; closed-cone coniferous forest; coastal prairie; <b>coastal scrub</b> ; and North coast coniferous forest.	Yes	No	Present in only one location in Marin County within the Seashore near Bull Point (PORE).
<i>Limnanthes douglasii</i> ssp. <i>sulphurea</i>	Point Reyes meadowfoam	SE; 1B	Coastal prairie; mesic areas in meadows; <b>freshwater marsh</b> ; and vernal pools.	Yes	No	Known from fewer than 15 occurrences (CNPS 2005). Present in Seashore (PORE).
<i>Limosella subulata</i>	Delta mudwort	2	<b>Marshes and swamps.</b>	Yes	No	Known in California from occurrences in the Sacramento-San Joaquin Delta; occurrence from PORE needs verification (CNPS 2005). Jepson classifies as native of eastern coast of North America and Europe (Hickman 1993).
<i>Lupinus tidestromii</i>	Tidestrom's lupine	FE; SE; 1B	Coastal dunes.	No	No	Present in Seashore (PORE).
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed	3	Broadleafed upland forest; chaparral; cismontane woodland; <b>valley and foothill grassland/rocky</b>	Yes	No	Known from several sites in east Marin. Not known from the Seashore (PORE).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Microseris paludosa</i>		1B; SacFW SSLC	Moist grassland or open woods; < 300 m.	Yes	No	Present in Seashore (PORE).
<i>Monardella undulata</i>	curly-leaved monardella	SacFW SSC; 4	Chaparral; coastal dunes; coastal scrub; ponderosa pine sandhills in lower montane coniferous forest.	Yes	No	Present in Seashore (PORE).
<i>Navaretia rosulata</i>	Marin County navarretia	1B; SacFW SSLC	Closed-cone coniferous forest; chaparral / serpentine, rocky	No		Known from fewer than 20 occurrences. Found on Mt. Tamalpais and in Marin Municipal Water District lands (NDDDB 2005). Not known from Seashore.
<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta	FE; SE; 1B	Often serpentine areas in valley and foothill grassland.	No		Known from only one extended occurrence near Highway 280 on San Francisco Peninsula and one occurrence in Santa Lucia Mountains (CNPS 2005). Historically found in Marin, but not known from the Seashore (PORE) or Tomales Bay area (NDDDB 2005).
<i>Peiraidia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah	SacFW SSC; 4	Mesic areas in broadleaved upland forest, chaparral, valley and foothill grassland, and vernal pools.	Yes	No	Present in Seashore (PORE).
<i>Phacelia insularis</i> var. <i>continentis</i>	northcoast phacelia	SacFW SSC; 1B	Coastal bluff scrub; coastal dunes.	Yes	No	Known from fewer than 10 occurrences (CNPS 2005). Present in Seashore (PORE).
<i>Piperia elegans</i> ssp. <i>decurtata</i>	Point Reyes rein orchid	1B	Generally dry, open sites; shrubland; coniferous forest; < 500 m.	No		Present in Seashore (PORE). Jepson does not recognize subspecies (Hickman 1993).
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	SacFW SSC; ST; 1B	Mesic areas in broadleaved upland forest, meadows, North Coast coniferous forest, and vernal pools.	Yes	No	Known from fewer than 10 occurrences (CNPS 2005). Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005).
<i>Pleuropogon refractus</i>	nodding semaphore grass	4	Mesic areas in lower montane coniferous forest, meadows, North Coast coniferous forest, and riparian forest.	Yes	No	Present in Seashore (PORE).

**APPENDIX A. LIST OF SPECIAL STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE GIACOMINI WETLAND RESTORATION PROJECT STUDY AREA AND VICINITY**

Information on species occurrences compiled from U.S. Fish and Wildlife Service Endangered and Threatened Species List (May 2005; Marin County); California Natural Diversity Database (NDDDB; 2005; Inverness, Tomales, and Point Reyes NE quadrangles), Point Reyes National Seashore rare plant database (PORE), and CNPS (2005; Inventory of rare and endangered vascular plants of California). BF Habitat Categories present in project area.

Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Polygonum marinense</i>	Marin knotweed	SacFW SSC; 3	Coastal salt marshes and brackish marshes.	Yes	Yes	Known from fewer than 20 occurrences. Taxonomic status uncertain, related to <i>P. aviculare</i> ; possibly synonym of <i>P. robertii</i> , a non-native plant (CNPS 2005). Present in several locations in the Seashore. Mapped previously on western side of Tomales Bay north of Inverness (NDDDB 2005). In 2003 one individual observed in undiked marsh 2,000 feet north of Giacomini Ranch.
<i>Quercus parvula</i> var. <i>tamalpaisensis</i>	Tamalpais oak	1B	Lower montane coniferous forest.	No		Not known from Seashore (PORE). Known only from Mt. Tamalpais. May hybridize with <i>Q. wislizenii</i> var. <i>frutescens</i> . Not recognized by the <i>Jepson Manual</i> as a separate species (CNPS 2005).
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	4	Mesic areas in cismontane woodland, North Coast coniferous forest, <b>valley and foothill grassland</b> , and vernal pools.	Yes	No	Present in Seashore (PORE). Found south of Olema Marsh in sag pond in Bear Valley (A. Ryan, NPS, pers. obs.).
<i>Rhynchospora californica</i>	California beaked-rush	SacFW SSC; 1B	Bogs and fens; lower montane coniferous forest; seeps in meadows; <b>freshwater marshes</b> .	Yes	No	Known from fewer than 10 occurrences (CNPS 2005). Mapped on western side of Inverness Ridge. Last seen in 1945 (NDDDB 2005).
<i>Sidaicea calycosa</i> ssp. <i>rhizomata</i>	checkerbloom	1B	<b>Marshes and swamps</b> near coast.	Yes	No	Present in Seashore (PORE).
<i>Sidaicea hickmanii</i> ssp. <i>viridis</i>	Marin checkerbloom	SacFW SSC; 1B	Serpentinite areas in chaparral.	No		One specimen identified by Howell near Drakes Bay in 1941; another collected in 1964 (NDDDB 2005).
<i>Spartina foliosa</i>	Cordgrass	SacFW SSLC	Low intertidal salt marsh and mud flats	Yes	Yes	Fringes undiked tidal channels north of Giacomini Ranch and the northernmost portion of Lagunitas creek (L. Parsons and A. Ryan, NPS, pers. obs.).

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Scientific name	Common name	Status	Habitat	Habitat Present	Species Present	Comments
<i>Stebbinsoseris decipiens</i>	Santa Cruz microseris	SacFW SSC; 1B	Open areas, sometimes serpentinite, in broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, and <b>coastal scrub</b> .	Yes	No	Known from fewer than 20 occurrences (CNPS 2005). Not known from Seashore (PORE) or Tomales Bay area (NDDDB 2005).
<i>Stellaria littoralis</i>	starwort	4	<b>Marshy fields; marshes;</b> coastal bluffs; < 40 m.	Yes	No	Common in coastal portions of Park (PORE). Not common in Tomales Bay area (NDDDB 2005).
<i>Streptanthus batrachopus</i>	Tamalpais jewelflower	SacFW SSC; 1B	Serpentinite areas in closed-cone coniferous forest and chaparral.	No		Known from fewer than 10 occurrences in the Mt. Tamalpais area (CNPS 2005). Intergrades with <i>S. barbiger</i> .
<i>Streptanthus glandulosus pulchellus</i>	Mount Tamalpais jewelflower	1B	Serpentinite areas in chaparral and valley and foothill grassland.	No		Endemic to the Mt. Tamalpais area. Present in GGNRA (PORE).
<i>Streptanthus niger</i>	Tiburon jewelflower	FE; SE; 1B	Serpentinite areas in valley and foothill grassland.	No		Known from only three occurrences on the Tiburon Peninsula (CNPS 2005).
<i>Trifolium amoenum</i>	showy clover	FE; 1B	<b>Valley and foothill grassland; coastal bluff scrub;</b> sometimes on serpentine soil; open, sunny areas; swales	Yes	No	Last recorded in Olema area in 1886. One plant rediscovered in Bodega area in 1993 and another in 1996 (CNPS 2005).
<i>Triphysaria floribunda</i>	San Francisco owl's-clover	SacFW SSC; 1B	Serpentinite areas in coastal prairie and valley and foothill grassland.	No		Present in Seashore (PORE).
<i>Triquetrella californica</i>	coastal triquetrella	1B	<b>Coastal bluff scrub; coastal scrub</b>	Yes	No	Known in CA from fewer than 10 small coastal occurrences (CNPS 2005). One specimen collected from the Olema area, date unknown (NDDDB 2005).

FEDERAL, STATE, AND CNPS STATUS CODES

**FEDERAL LISTING**

- FE = Listed as endangered under federal Endangered Species Act.
- FT = Listed as threatened under federal Endangered Species Act.
- FPE = Proposed for listing as endangered under the federal Endangered Species Act.
- FPT = Proposed for listing as threatened under the federal Endangered Species Act.
- SacF
- WSS = A U.S. Fish and Wildlife Service Species of Concern (formerly a category 2 candidate for listing).
- C

**STATE LISTING**

- SE = Listed as endangered under the California Endangered Species Act.
  - ST = Listed as threatened under the California Endangered Species Act.
  - SR = Listed as rare under the California Endangered Species Act.
- CALIFORNIA NATIVE PLANT SOCIETY (CNPS) LISTING**
- 1A = Plants presumed extinct in California.
  - 1B = Plants rare, threatened, or endangered in California.
  - 2 = Plants rare, threatened, or endangered in California, but more common elsewhere.
  - 3 = Plants about which we need more information – a review list.
  - 4 = Plants of limited distribution – a watch list.

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**APPENDIX B. LIST OF SPECIAL STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE GIACOMINI WETLAND RESTORATION PROJECT AND VICINITY**

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<b>Mammals</b>						
<i>Antrozous pallidus</i>	pallid bat	CSC	Found in any areas that have structures or tree hollows (G. Fellers, USGS, 2001).	No	No	Occurrences near Tocaloma/Olema (NDDDB 2005).
<i>Aplodontia rufa phaea</i>	Point Reyes mountain beaver	FSacS C	Coastal areas; North facing slopes of hills and gullies with sword ferns and thimbleberries	No	No	Historic occurrences near Mt. Wittenberg, Bear Valley Ranch, and Inverness; 1981 survey did not locate extant populations at first two locations (NDDDB 2005).
<i>Arctocephalus townsendi</i>	Guadalupe fur seal	FT	Open ocean, haul out on islands	No	No	No records within Tomales Bay.
<i>Balaenoptera borealis</i>	sei whale	FE	Offshore occurrence	No	No	No records within Tomales Bay.
<i>Balaenoptera musculus</i>	blue whale	FE	Offshore occurrence	No	No	No records within Tomales Bay.
<i>Balaenoptera physalus</i>	finback whale	FE	Offshore occurrence	No	No	No records within Tomales Bay.
<i>Corynorhinus townsendii townsendii</i>	Townsend's western big-eared bat	FSacS C	Roosts in limestone caves, lava tubes; roosts only in the open, hanging from walls and ceilings.	No	No	Roost found near Tocaloma (NDDDB 2005). There are known colonies near Inverness park, and 5 mi S of Olema (G. Fellers, USGS, 2005).
<i>Enhydra lutris</i>	Southern sea otter	FT	Occurs in bays and coastal waters	No	No	Occurs rarely in Tomales Bay; live foraging sea otter documented in 2004 (S. Allen 2005).
<i>Eschrichtius robustus</i>	gray whale	FD	Occurs as migrant in nearctic waters along outercoast..	No	No	Annually seen in Tomales Bay and feeding noted; carcass found in 1976 (S. Allen, Seashore, 2005, D. Adams, Seashore, 2001)
<i>Eubalaena glacialis</i>	right whale	FE	Offshore occurrence	No	No	No records within Tomales Bay.

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<i>Eumetopias jubatus</i>	Steller sea lion	FT, FX	Nearshore and rocky intertidal area and Tomales Bay	No	No	Historically bred at Point Reyes Headlands (S. Allen, Seashore, 2001)
<i>Eumops perotis californicus</i>	greater western mastiff-bat	FSacS C	Rocky cliffs	No	No	Not known to occur locally.
<b><i>Lontra canadensis sonorae</i></b>	Southwestern river otter	CSC	Estuaries, rivers, marshes, and riparian areas.	Yes	Yes	First observed near Giacomini Ranch in 1992 (PWA et al. 1993). Since 2001, common sightings in Lagunitas Creek and portions of Giacomini Ranch drainage ditches. Burrow observed adjacent to northwestern corner of West Pasture in 2002 (ARA et al. 2003).
<i>Megaptera novaeangliae</i>	humpback whale	FE	Open ocean and nearshore	No	No	Occurs around Point Reyes Headlands (S. Allen, Seashore, 2001).
<i>Myotis evotis</i>	long-eared myotis bat	FSacS C	Douglas-fir forest	No	No	Occurrences near Five Brooks (G. Fellers, USGS, 2001).
<i>Myotis thysanodes</i>	fringed myotis bat	FSacS C	Roosts in barns and other buildings; forages over wetlands, fields, and forest.	Yes	Unknown	
<i>Myotis volans</i>	long-legged myotis bat	FSacS C	Roosts in barns and other buildings; forages over wetlands, fields, and forest.	Yes	Unknown	Less common; occurs in Park (G. Fellers, USGS, 2001).
<i>Myotis yumanensis</i>	yuma myotis bat	FSacS C	Roosts in barns and other buildings; forages over wetlands, fields, and forest.	Yes	Unknown	Observed in Bear Valley near Park headquarters (G. Fellers, USGS, 2001).
<i>Phoca vitulina richardii</i>	Pacific harbor seal	MMPA ?	Open waters in coastal and bay waters and Intertidal	Yes	Yes - Rare	Wanders with the tide up the estuarine reaches of Lagunitas Creek on occasion (ARA et al. 2003).

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<i>Physeter catodon</i>	sperm whale	FE	Offshore occurrence, but carcasses wash ashore in bays and estuaries.	No	No	No records in Tomales Bay; carcass washed ashore in Drakes Estero 2004. (S. Allen, Seashore, 2005)
<i>Zalophus californianus</i>	California sea lion	none	Bays and estuaries	Yes	No	Occurs in Tomales Bay coincident with herring runs, including up to the town of Point Reyes Station (ARA et al. 2003, S. Allen, Seashore, 2005).
<i>Zapus trinotatus orarius</i>	Point Reyes jumping mouse	FSacSC	Riparian and grassland	Yes	Yes - Rare	No individuals caught during trapping surveys conducted in 2002 (ARA et al. 2003). It does occur on the Point Reyes Peninsula (G. Fellers, USGS, 2005)
<b>Birds</b>						
<i>Accipiter cooperi</i>	Cooper's hawk	CSC	Riparian shrubs and trees	Yes	Yes	Common migrant and fairly common winter resident at southern end of Tomales Bay and Olema Marsh. Breeds irregularly on east slope of Inverness Ridge (ARA et al. 2003).
<i>Accipiter striatus</i>	sharp-shinned hawk	CSC	Riparian shrub, and trees	Yes	Yes	Common migrant and fairly common winter resident at southern end of Tomales Bay and Olema Marsh. Breeds irregularly on east slope of Inverness Ridge (ARA et al. 2003).
<i>Agelaius tricolor</i>	tricolored blackbird	FSacSC	Open country, protected nesting substrate. Nests colonially in freshwater marsh habitat.	Yes	Yes	Breeds infrequently in southern Tomales Bay, but not on Giacomini Ranch. Large flocks occur around feed lot on Ranch and on pastures months. Most abundant in fall-winter (ARA et al. 2003).

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<i>Ammodramus savannarum</i>	grasshopper sparrow	BSSC2; S2	Short to mid-height grassland.	Yes	Yes	Fairly common breeder (Apr-Aug) on east shore of Tomales Bay. Present in East Pasture of Giacomini Ranch in summer 2002 (ARA et al. 2003).
<i>Amphispiza belli belli</i>	bell's sage sparrow	FSacSC ; CSC	Breeds in chaparral and arid shrub habitat.	No	No	Distribution confined to Carson Ridge, Mt. Tamalpais. Very rare vagrant to Park (ARA et al. 2003).
<i>Aquila chrysaetos</i>	golden eagle	CSC; S3	Nests in rolling foothill mountain areas, in cliffs or large trees	No	Yes	Usually nests in northern Marin county, but has nested in Point Reyes. Occasional flyover sighting in Project Area (ARA et al. 2003). Seen 12/15/05 flying over Giacomini fields (J. Evens, ARA, 2005)
<i>Anser albifrons elgasi</i>	tule greater white-fronted goose	BSSC2			Yes	Rare winter visitor to moist pastures and ponds in Project Area (ARA et al. 2003)
<i>Ardea alba</i>	great egret	S4	Nests in large trees near marshes, tide flats, irrigated pastures.	Yes	Yes	Common in all wetlands around Tomales Bay; nests in Inverness Park and forages locally in shallow estuarine waters and tidal, freshwater and brackish marshes and moist pastureland.
<i>Ardea herodias</i>	great blue heron	S4	Nests in tall trees, cliffsides, and marshes near foraging areas.	Yes	Yes	Rookery in Inverness Park (NDDDB 2005) and Bear Valley. Forages regularly on Giacomini Ranch (ARA et al. 2003).
<i>Arenaria melanocephalus</i>	black turnstone	FSacSC	Rocky shores	No	No	Occurs along Tomales Bay. Moderately common. (G. Fellers, USGS, 2005).

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<i>Asio flammeus</i>	short-eared owl	CSC; BSSC2	Tidal marshes, lowland meadows, and swales.	Yes	Yes	Breeds at Pt Reyes, and there is a chance it breeds within the Tomales Bay watershed (G. Fellers, USGS, 2005). Forages sporadically during fall and winter in tidal marsh north of Millerton Point. Sporadically roosts in <i>Grindelia</i> high marsh in undiked marsh north of Giacomini Ranch. (ARA et al. 2003).
<i>Asio otus</i>	long-eared owl	BSSC2	Nests in riparian bottomlands and hunts in adjacent open fields.			Was not found in Project Area during field surveys. Irregular visitor to riparian areas and has occasionally bred locally (ARA et al. 2003).
<i>Athene cunicularia</i> var. <i>hypugaea</i>	burrowing owl	FSacSC , CSC; BSSC1	Nests in burrows in open fields; winters in same area.	No	Yes – Rare	Reported as occurring on Giacomini Ranch in 1992 (PWA et al. 1993). Occurs very rarely in coastal Marin. Not detected in 2001-2002 (ARA et al. 2003). Regularly occurs (but is not common) at Point Reyes (G Fellers, USGS, 2005)
<i>Aythya americana</i>	redhead	BSSC2	Marshy lakes and ponds		Yes	Occasional in outer Tomales Bay. Irregular visitor to ponds in Project Area (ARA et al. 2003).
<i>Botaurus lentiginosus</i>	American bittern	FSacSC ; BSSC3	Freshwater, brackish and coastal marshes		Yes	Sporadic occurrences at Olema Marsh (ARA et al. 2003).
<i>Brachyramphus marmoratus</i>	marbled murrelet	FT, FX	Nests in old growth conifer forest near open ocean and bays for foraging.	No	No	Not known to breed in Marin County, but occurs in nearctic waters most months. No records in Tomales Bay (ARA et al. 2003).

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<i>Branta bernicla nigricans</i>	black brant	BSSC3	Shallow bays and coastal marshes	Yes	Yes	Abundant seasonal migrant through outer Tomales Bay. Occasional in ponds in Project Area (ARA et al. 2003).
<i>Branta canadensis leucopareia</i>	Aleutian Canada goose	FD	Wet pastures, shallowly flooded fields, and marshes along coastal Marin County, especially during fall and winter.	Yes	Yes	Sporadically roosts in diked marsh and pasture areas south of north levee in West Pasture of Giacomini Ranch (ARA et al. 2003). Two present in mixed flock 12/19/05 (J. Evens, ARA, 2005).
<i>Branta canadensis minima</i>	cackling Canada goose	BSSC2			Yes?	Very rare transient through Project Area. (ARA et al. 2003). Recorded in project area 12/05 in mixed flock with Canada geese and Aleutians (J. Evens, ARA, 2005).
<i>Bucephala albeola</i>	bufflehead	BSSC3			Yes	Common in open water habitat in Tomales Bay during winter. Found in Project Area (ARA et al. 2003).
<i>Buteo regalis</i>	ferruginous hawk	FSacSC ; CSC	Breeds in open country, including prairie grassland and shrubland.	Yes	Yes	Casual visitor to the Giacomini Ranch with several sightings, mostly during fall and winter, to pastures and wetlands (ARA et al. 2003).
<i>Calidris canutus</i>	red knot	FSacSC	Beaches and mudflats	Yes	No	Occurs irregularly and in low numbers on Tomales Bay mudflats (G. Fellers, USGS, 2005). Formerly regular, in low numbers, at mouth of Lagunitas Creek; not recorded in recent year (J. Evens, ARA, 2005).

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<i>Catharus ustulatus</i>	Swainson's thrush	BSSC2	Breeds in riparian and coastal scrub habitats	Yes	Yes	Locally common breeder. Occurs in Project Area (ARA et al. 2003). Dependant on riparian understory cover (J. Evens, ARA, 2005).
<i>Ceryle alcyon</i>	belted kingfisher	BSSC3			Yes	Nests along Lagunitas Creek and Sir Francis Drake Blvd adjacent to Project Area. Common year-round resident (ARA et al. 2003).
<i>Chaetura vauxi</i>	Vaux's swift	FSacSC	Nests in coniferous forests. Often forages over rivers and lakes.		Yes	Locally uncommon. Suspected of breeding in mature and decadent conifer forests of Bolinas and Inverness Ridges. Uncommon transient flying over Giacomini Ranch (ARA et al. 2003).
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	FT, FX	Sandy beaches, salt pond levees; needs sandy, gravelly, or friable soil for nesting.	No	No	Nests on outer coastal beaches at Park. May have bred formerly and/or occasionally at Dillon Beach, but does not breed along the shoreline of Tomales Bay. Occasional migrant/winter records for tidal flats at south end of Tomales Bay (Stenzel et al. 1981).
<i>Chidonias niger</i>	black tern	FSacSC, CSC; BSSC3		No	No	Rare vagrant over tidal shallows (ARA et al. 2003).
<i>Chondestes grammacus</i>	lark sparrow	Former FSC		No	Yes - Rare	Breeds in Chileno Valley and eastern shore of Tomales Bay. Rare spring and fall transient to grassland at south end of Tomales Bay. Sighted once in Project Area in spring 2002 (ARA et al. 2003).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Circus cyaneus</i>	northern harrier	CSC; BSSC2	Open fields, savannas, meadows and marshes; in mating season found in marsh-like areas.	Yes	Yes	Observed in Giacomini Ranch and vicinity since 1961. Common forager over Giacomini Ranch. Breeds in northwestern corner near Project Area (ARA et al. 2003).
<i>Coccyzus americanus occidentalis</i>	yellow-billed cuckoo	FC; SE		No	No	One was sighted in the Point Reyes Peninsula in August 2003 and fall 2005. Does not breed in the Park. Has never nested locally; no habitat.(J. Evens, ARA, 2005).
<i>Cortopos cooperi</i>	olive-sided flycatcher	FSacSC ; BSSC2	Nests in Douglas Fir and Bishop Pine association.	No	Yes	Nests on Inverness Ridge (Shuford 1993). Does not breed at Giacomini Ranch, but was observed near Project Area, probably as post-breeding dispersant (ARA et al. 2003).
<i>Coturnicops noveboracensis</i>	yellow rail	CSC; BSSC2	Freshwater marshlands	Yes	Yes	Very rare visitor to southern Tomales Bay. Sighted several times since 1996, including in tidal marsh and riparian areas of Project Area in winter 2001-2002 (ARA et al. 2003). Sighted each subsequent winter 2002-2005; records increasing in greater Bay Area (J. Evens, ARA, 2005).
<i>Cypseloides niger</i>	black swift	FSacSC ; CSC	Breeds on cliffs adjacent or behind waterfalls in canyons and sea-bluffs above surf.	No	No	Very rare fall migrant through southern Tomales Bay. Observed at Dillon Beach and Point Reyes headlands in migration. Not known to breed in Marin County (ARA et al. 2003).

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<i>Dendroica occidentalis</i>	hermit warbler	Former FSC, S3	Breeds in Douglas fir forest.	No	Yes	Uncommon breeder on Inverness Ridge. Occasionally uses riparian scrub area on Point Reyes Mesa adjacent to Giacomini Ranch (ARA et al. 2003).
<i>Dendroica petechia brewsteri</i>	yellow warbler	CSC	Nests and forages in riparian vegetation – California bay and willow.	Yes	Yes	Breeds regularly near confluence of Olema and Lagunitas Creeks and historically near Inverness Park. Also appear to breed in riparian scrub area on Point Reyes Mesa adjacent to Giacomini Ranch. Common fall migrant through riparian corridor (ARA et al. 2003).
<i>Diomedea albatrus</i> (=Phoebastria albatrus)	short-tailed albatross	FPE	north Pacific Ocean, most frequently the productive edge of the outer Continental Shelf	No	No	Closest breeding colony is in Izu, Japan. Extremely rare wanderer offshore, but becoming more frequent (ARA et al. 2003). Some individuals seen most years off the Marin/Sonoma coast. Not within Tomales Bay (G. Fellers, USGS, 2005).
<i>Elanus leucurus</i>	white-tailed kite	FSacSC	Coniferous forest; open grasslands.	Yes	Yes	Common breeder on Inverness Ridge. Common during all seasons in pasture and marsh areas in northwestern corner of Giacomini Ranch (ARA et al. 2003).
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	FSacSC	Riparian habitat	Yes	Yes	One of the most common breeding passerines in the riparian forests, thickets, and scrub on the perimeter of the Giacomini Ranch (ARA et al. 2003).

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<i>Empidonax traillii brewsteri</i>	willow flycatcher	SE (nest.)	Riparian habitat	Yes	Yes - Rare	Does not breed in Park or in Marin County. Uncommon migrant through southern Tomales Bay in spring and fall. Observed on Giacomini Ranch in Aug.-Sept. 2001 (ARA 2002).
<i>Eremophila alpestris actia</i>	California horned lark	BSSC3	Coastal areas from Sonoma to San Diego counties.	Yes	Unknown	Uncommon visitor to outer Point Reyes. Probably occurs in the Project Area (ARA et al. 2003). Occurs along the east side of Tomales Bay. Has been recorded on a number of Christmas bird counts (G. Fellers, USGS, 2005).
<i>Falco columbarius</i>	merlin	CSC	Estuaries and coastal embayments	Yes	Yes	Regular winter visitor to southern end of Tomales Bay. Present in very low numbers in late autumn through winter, hunting over undiked marsh north of Giacomini Ranch and pastures (ARA et al. 2003).
<i>Falco mexicanus</i>	prairie falcon	BSSC3	Nests in dry, open areas		No	Rare transient, but have been documented wintering in southern Tomales Bay in 2002 (ARA et al. 2003). Seen occasionally as a fly by over south end of Tomales Bay, but fairly regular in fall and winter at Abbott's Lagoon (J. Evens, ARA, 2005).
<i>Falco peregrinus anatum</i>	American peregrine falcon	FD; SE	High cliffs, ledges for nesting		Yes	May breed at Park. Regularly observed foraging over Giacomini Ranch and undiked marsh north of Ranch (ARA et al. 2003).

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<i>Fratercula cirrhata</i>	tufted puffin	CSC; BSSC1; S2	Open ocean. Nest on islands and rarely on ocean cliffs.	No	No	Occasional in the vicinity of Drakes Bay. Not known to occur in Tomales Bay (NDDDB 2005).
<i>Gavia immer</i>	common loon	CSC		Yes	Yes	Occurs in open water in Tomales Bay. Occasionally wanders up Lagunitas Creek on high winter tides (ARA et al. 2003).
<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	FSacSC ; CSC; BSSC2	Freshwater, saltwater marshes with thick, continuous cover	Yes	Yes	Point Reyes may support one-third of total population of this taxon. Breeds commonly in coastal marshes throughout Point Reyes, Olema, and Bear Valley marshes. Observed in riparian corridor along western and eastern edges of Giacomini Ranch and Olema Marsh (ARA et al. 2003).
<i>Grus canadensis tabida</i>	sandhill crane	ST			Yes – Rare	Very rare visitor to wet pastures on Giacomini Ranch (ARA et al. 2003).
<i>Haliaeetus leucocephalus</i>	bald eagle	FT, SE	Forages in large water body.	No	No	Does not breed at Park. Very rare fall/winter visitor to Tomales Bay. May forage occasionally on Giacomini Ranch, but not observed during 2001-2002 surveys (ARA et al. 2003).
<i>Haematopus bachmani</i>	black oystercatcher	FSacSC	Rocky shorelines on the coast.	No	No	Occurs on rocky shoreline at the mouth of Tomales Bay; not likely to occur at South end due to lack of habitat. Breeds on outer Point Reyes and Tomales Point in very limited habitat.(J. Evens, ARA, 2005).

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<i>Histrionicus histrionicus</i>	harlequin duck	FSacSC, CSC; BSSC1	Breeds on swift flowing northern rivers, nesting on rocky islands in rivers or in sheltered sites on banks.	No	No	Rare winter visitor to rocky Tomales Bay shoreline (ARA et al. 2003).
<i>Icteria virens</i>	yellow-breasted chat	BSSC3; S3	Dense riparian thickets.		Yes	Sometimes breeds in riparian thickets in the Project Area. Last seen in July 2001 (ARA et al. 2003). Observed in willows along lower Lagunitas Creek (near old dam site), August 2005 (J. Evens, ARA, 2005).
<i>Ixobrychus exilis hesperis</i>	Western least bittern	S1; BSSC3	Nests in marshes and pond/resevoir fringes	Yes	Yes	Rare in the area. Bred in Olema Marsh in 1998. Seen in June 2002 (ARA 2002).
<i>Lanius ludovicianus</i>	loggerhead shrike	FSacSC, CSC; S4			Yes	Uncommon visitor to Marin County coast during fall-spring. Breeds in interior areas of watershed such as Chileno Valley. Occasionally observed during fall/winter in undiked marsh north of Giacomini Ranch (ARA et al. 2003).
<i>Larus californicus</i>	California gull	CSC; S2			Yes	Fairly common non-breeding visitor to Tomales Bay and vicinity. Occasional, incidental visitor to dairy, open water, and irrigated fields (ARA et al. 2003).

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<i>Lateralus jamaicensis coturniculus</i>	California black rail	ST	Freshwater, saltwater or brackish marshes bordering large bays	Yes	Yes	Once very common in Tomales Bay marshes. Occasional breeder in Olema and Bear Valley marshes. Potential breeding birds consistently present in undiked marsh north of Giacomini Ranch and, during surveys, in freshwater marsh in West Pasture (ARA et al. 2003).
<i>Limosa fedoa</i>	marbled godwit	FSacSC	Nest in grassy marshes and feed in beaches and mudflats	Yes	No	A common visitor to Tomales Bay in fall, winter, spring. Large numbers may congregate in flooded pastures on high tides, but usually forages on tidal flats and adjacent tidal marsh (J. Evens, ARA, 2005).
<i>Melospiza melodia samuelis</i>	San Pablo song sparrow	FSacSC ; CSC			No	Does not occur in Tomales Bay watershed (ARA et al. 2003).
<i>Numenius americanus</i>	long-billed curlew	FSacSC		Yes	Yes	Occurs regularly on tidal flats north of the Giacomini Ranch and on flooded pastures during fall and winter (J. Kelly, 2001).
<i>Numenius phaeops</i>	whimbrel	FSacSC	Coastal marshes, beaches, and rocky shore	Yes	No	Occurs in Tomales Bay (G. Fellers, USGS, 2005).
<i>Nycticorax nycticorax</i>	black-crowned night heron	Former FSC; S3		Yes	Yes	Small numbers roost regularly in northwestern corner of Giacomini Ranch and occasionally in willows along Lagunitas Creek. Also roosts irregularly in willows along Tomasini Creek at base of Point Reyes Mesa (ARA et al. 2003).

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<i>Oceanodroma homochroa</i>	ashy storm-petrel	FSacSC ; CSC; BSSC2	Nests on rocky cliff areas and off-shore islands.	No	No	Observed in northern portion of Tomales Bay and Point Reyes Headlands. Extremely unlikely in southern Tomales Bay (ARA et al. 2003).
<i>Pandion haliaetus</i>	osprey	CSC	Large nests in tree tops within 15 miles of waterbodies with fish	Yes	Yes	Breeds on Inverness Ridge. Approximately 20 nests per year distributed along Inverness Ridge from Five Brooks to Tomales Bay State Park. Observed regularly foraging over Giacomini Ranch (ARA et al. 2003).
<i>Pelecanus erythrorhynchos</i>	American white pelican	CSC; BSSC1	Nests on large interior lakes.		Yes	Observed occasionally on Lagunitas Creek near Project Area (ARA et al. 2003).
<i>Pelecanus occidentalis californicus</i>	California brown pelican	FE, SE	Open water and roosts on mudflats; breed in Channel Islands.	Yes	Yes	Does not breed at the Park, but fairly common non-breeding visitor to Tomales Bay. Irregular visitor to Giacomini Ranch in small numbers. Most commonly observed in fall foraging in open water or roosting along shoreline of Lagunitas Creek (ARA et al. 2003).
<i>Phalacrocorax auritus</i>	double-crested cormorant	CSC	Open water and nearshore feeding; nests in trees and structures.	Yes	Yes	Common year-round resident in southern Tomales Bay and along Lagunitas Creek. Roosting flocks of up to several hundred birds observed on tidal flats at mouth of Lagunitas Creek. Believed to breed on outer coast (ARA et al. 2003).

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<i>Plegadus chihii</i>	white-faced ibis	CSC; S1	Shallow freshwater marshes	Yes	Yes - Rate	Rare transient. Large flocks visited Project Area in late spring 2000/2002 (ARA et al. 2003).
<i>Porzana carolina</i>	sora	BSSC3	Vegetated brackish and freshwater marshes	Yes	Yes	Uncommon breeder in the Project Area. Present in 2002 breeding season (ARA 2002).
<i>Progne subis arboricola</i>	purple martin	BSSC1; S3	Woodlands and low-elevation coniferous forest.	No	Yes	Regular breeder on Inverness Ridge. Forages in Olema Marsh (ARA et al. 2003).
<i>Ptychotamphus aleuticus</i>	Cassin's auklet	BSSC2			No	Breeds on the Farallon Islands and has been rarely seen at the mouth of Tomales Bay (ARA et al. 2003).
<i>Rallus longirostris obsoletus</i>	California clapper rail	FE, SE	Salt marsh, estuarine	Yes	Yes	Occurs sporadically in undiked marsh north of Giacomini Ranch. Observed for four to five years during 1990s in undiked marsh. However, none detected in this area since 2001 (ARA et al. 2003 and J. Evens, ARA, 2005).
<i>Rhynchops niger</i>	black skimmer	FSacSC ; BSSC3	Nests on sandy beaches, and gravel bars.	Yes	No	Nests in Salton Sea and San Diego Bay. (NDDDB 2005) Has been spotted as transient in Bodega Bay (McCaskie et al. 1979 <sup>4</sup> ). Being seen with increasing regularity in San Francisco Bay (G. Fellers, USGS, 2005). Occasional transient at Tomales Bay (J. Evens, ARA, 2005).
<i>Riparia riparia</i>	bank swallow	ST; FSacSC			Yes - Rate	Rare transient over Giacomini Ranch, especially in fall (ARA et al. 2003).

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<i>Selasphorus rufus</i>	rufous hummingbird	FSacSC			Unknown	Migrates through Coast Range, but does not breed. Uncommon transient in southern Tomales Bay in spring and fall (ARA et al. 2003) Very closely resembles Allen's hummingbird, so presence in Project Area is possible, but not confirmed (ARA et al. 2003).
<i>Selasphorus sasin</i>	Allen's hummingbird	FSacSC	Riparian, mixed evergreen, Douglas fir, redwood, Bishop pine forests, and coastal scrub.	Yes	Yes	Common breeder in southern Tomales Bay and Marin County. Breeds in the Project Area in riparian thickets and blackberry bushes (ARA et al. 2003).
<i>Sphyrapicus ruber</i>	red-breasted sapsucker	FSacSC	Nests in mixed evergreen or riparian forests adjacent to Douglas fir forests.	Yes	Yes	Rather uncommon in coastal Marin County. Observed in alder-dominated riparian habitat on western edge of Giacomini Ranch during fall and winter (ARA et al. 2003) Occasionally seen in the Bear Valley area. One bird was resident here for several months in the fall of 2005 (G. Fellers, USGS, 2005).
<i>Sterna antillarum browni</i>	California least tern	FE; SE	Nests along the coast in sparsely vegetated flats.	No	No	Very rare transient; no recent records (J. Evens, ARA, 2005).
<i>Sterna elegans</i>	elegant tern	FSacSC, CSC, BSSC3		Yes	Yes	Fairly common to abundant fall transient to shallow estuarine waters at southern end of Tomales Bay. Occurs in Project Area (ARA et al. 2003).

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<i>Strix occidentalis caurina</i>	northern spotted owl	FT	Old growth forests or mixed old growth and mature trees	No	No	Nests in east slope canyons on Inverness Ridge at least 1 mile from Giacomini Ranch (D. Adams, Seashore, 2001). Dead bird found along Sir Francis Drake Highway in 1995 (ARA et al. 2003).
<i>Synthliboramphus hypoleucus</i>	Xantus' murrelet	FSacSC ; ST; BSSC2	Oceanic habitats.	No	No	No records of this marine species in Tomales Bay ( Stallcup et al, 2000 <sup>1</sup> )
<i>Thryomanes bewickii</i>	Bewick's wren	Former FSC	Riparian habitat. Most common in coastal scrub and drier habitats.	Yes	Yes	Very common and widespread throughout Marin County and Point Reyes Peninsula. Fairly common resident on Point Reyes Mesa bluff and in blackberry patches in riparian forests along perimeter of Giacomini Ranch (ARA et al. 2003).
<i>Toxostoma redivivum</i>	California thrasher	FSacSC			No	Closest breeding population on Carson Ridge. Does not occur on Giacomini Ranch or southern Tomales Bay (ARA et al. 2003).
<i>Vireo bellii pusillus</i>	Least Bell's vireo	FE, FX, SE	Riparian habitat	Yes	Yes – Rare	Occurs as extremely rare vagrant in riparian corridor along southern end of Lagunitas Creek. Sighted in Project Area near Lagunitas Creek in 1985 (ARA et al. 2003).
<b>Reptiles</b>						
<i>Caretta caretta</i>	loggerhead turtle	FT	Continental shelves, bays, estuaries, and lagoons in temperate, subtropical, and tropical waters; nest on ocean beaches.	No	No	Observed in the outer coast; vagrant only in Tomales Bay.

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Chelonia mydas</i>	green turtle	FT	Open ocean; nest on ocean beaches.	No	No	Observed in the outer coast; vagrant only in Tomales Bay.
<i>Clemmys marmorata marmorata</i>	northwestern pond turtle	FSacSC	Near-permanent water with basking sites	Yes	Yes	Observed in Lagunitas Creek and both the West and East Pastures of the Giacomini Ranch, although only one occurrence in West Pasture (Fong 2002, Fellers and Guscio 2002).
<i>Dermochelys coriacea</i>	leatherback turtle	FE	Open ocean; nest on ocean beaches.	No	No	Observed in the outer coast; vagrant only in Tomales Bay.
<i>Lepidochelys olivacea</i>	olive ridley sea turtle	FT	Open ocean	No	No	Observed in the outer coast; vagrant only in Tomales Bay.
<i>Phrynosoma coronatum frontale</i>	California horned lizard	FSacSC	Arid areas with ants	No	No	No records in Tomales Bay (ARA et al. 2003).
<b>Amphibians</b>						
<i>Ambystoma californiense</i>	California tiger salamander	FT	Ponds and streams near ground squirrel burrows	Yes	No	Not known from Marin County. Nearest populations are just S of Santa Rosa. (G. Fellers, USGS, 2005).
<i>Rana aurora aurora</i>	northern red-legged frog	FSacSC	Ponds, streams, wet woodlands	Yes	No	Nearest records are from north of Pt Arena (G. Fellers, USGS, 2005).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Rana aurora draytonii</i>	California red-legged frog	FT	Deep pools with dense, shrubby, or emergent vegetation. Oversummer in riparian habitat.	Yes	Yes	Present in numerous areas in Tomales Bay and the Seashore, some of which is Critical Habitat. Occurs in East and West Pastures on Giacomini Ranch. However, breeding adults occur only in West Pasture, specifically central portion of Fish Hatchery Creek and freshwater marsh (Fellers and Guscio 2002). Numbers have fluctuated since 2001 due possibly to salinity intrusion events in winter. Also occurs in Olema Marsh, although conditions make estimating population size difficult (G. Fellers, USGS, 2004).
<i>Rana boylei</i>	foothill yellow-legged frog	FSacSC	Shallow streams with riffles and rocky substrate	Yes	No	Observed near Salmon Creek and Walker Creek (NDDDB 2005). Nearest occurrence reported 2 miles from Giacomini Ranch in a hillside drainage near Inverness (G. Fellers, USGS, 2001).
<b>Fish</b>						
<i>Acipenser medirostris</i>	green sturgeon	FT	Feeds in estuaries and bays, but breeds in the freshwater of large rivers.	Yes	Yes	Last official sighting in Tomales Bay in 1995 (ARA et al. 2003). Listing applies only to the Sacramento River population(s).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Eucyclogobius newberryi</i>	tidewater goby	FE	Brackish water in shallow lagoons and lower stream reaches	Yes	Yes	Last observed in Tomales Bay watershed in 1953 until 2002, when small population discovered in the portion of Tomasini Creek within the Giacomini Ranch (ARA et al. 2003). As of 2006, also found in Fish Hatchery Creek in West Pasture and East Pasture drainage ditch system.
<i>Hypomesus transpacificus</i>	delta smelt	FT		No	No	Occur only in Sacramento and San Joaquin River watersheds.
<i>Lampetra tridentata</i>	Pacific lamprey	FSacSC	Anadromous in high flow systems.	Yes	Yes - Rare	Listed as common in Lagunitas Creek (Tomales Bay Association 1995) and present in Olema Creek (Ketcham et al. 2005). Migrates through Project Area.
<i>Lavinia symmetricus ssp 2</i>	Tomales roach	CSC	Freshwater portions of small creeks and streams and isolated pools.	Yes	No	Reported in Walker Creek and upstream portions of Lagunitas Creeks (NDDDB 2005). Not observed in downstream portion of Lagunitas Creek or Giacomini Ranch streams and drainages during 2002 (ARA 2002) or 2005 (M. Reichmuth, Seashore, 2005).
<i>Oncorhynchus kisutch</i>	coho salmon – central CA coast	FE, FX	Typically spawn in upper portions of watershed. Smolts use estuary for feeding and refugia; adults use estuary as holding area prior to migrating upstream.	Yes	Yes	Currently spawn in upstream portions of Olema Creek, Lagunitas Creek, Devil's Gulch, and San Geronimo Creek (NDDDB 2005). Smolts found in downstream portion of Lagunitas Creek and Tomasini Creek in June 2005 (Ketcham et al. 2005).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Oncorhynchus mykiss</i>	central CA coastal steelhead	FT, FX	Typically spawn in upper portions of watershed. Smolts use estuary for feeding and refugia; adults use estuary as holding area prior to migrating upstream.	Yes	Yes	Historically abundant in Lagunitas Creek and tributaries. Historical status in Tomasi and Fish Hatchery Creeks unknown. Smolts found in downstream portions of Lagunitas, Bear Valley, and Tomasi Creeks in 2004 and/or 2005. Juveniles also observed in Fish Hatchery Creek in 2002 and 2005 (ARA et al. 2003; Ketcham et al. 2005).
<i>Oncorhynchus tshawytscha</i>	Southern Oregon/California coastal chinook salmon	FT, FX	Typically spawn in middle to upper portions of watershed. Smolts use estuary for feeding and refugia; adults use estuary as holding area prior to migrating upstream.	Yes	Yes	Typically found in all estuaries north of San Francisco Bay, except Tomales Bay. However, small numbers observed in Lagunitas Creek annually since 1998; Not likely a sustained population (B. Ketcham, Seashore, 2001). One stray found in Olema Creek in 2004 (M. Reichmuth, Seashore, 2005).
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	FSacS C, CSC			No	Endemic to Central Valley; largely confined to Delta, Suisun Bay, Suisun Marsh, and Napa Marsh.
<i>Spirinchus thaleichthys</i>	longfin smelt	FSacS C, CSC			No	Occurs at Estero de San Antonio (ARA et al. 2003).
<b>Invertebrates</b>						
<i>Adela oplerella</i>	Opler's longhorn moth	FSacS C	Confined to serpentine soil-based grassland.	No	No	Recorded occurrences are 18 sites extending from 5 miles southeast of Nicasio in Marin County to Gilroy area in Santa Clara County and Oakland on the inner Coast Ranges (USFWS).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Caecidotea tomalensis</i>	Tomales isopod	Former FSC, S2	Stagnant freshwater ponds	Yes	Unknown	
<i>Carterocephalus palaemon</i>	Sonoma arctic skipper	FSacS C	Adults use glades and openings in heavily forested woods, moist meadows, streambanks. Host plants include purple needlegrass and iris.	No	No	Nearest recorded occurrence is Ft. Bragg (S. Allen, Seashore, 2001).
<i>Cicindela hirticollis gravida</i>	sandy beach tiger beetle	FSacS C	Inhabits clean, dry, light-colored sand in upper zone of beach dunes.	No	No	Could occur near Lawson's Landing, but not on the Giacomini property, (G. Fellers, USGS, 2005).
<i>Coelus globosus</i>	globose dune beetle	FSacS C	Inhabits coastal sand dune habitats commonly burrowing below the sand surface and dune vegetation of the foredunes and sand hummocks.	No	No	Moderately common in suitable dune habitat such as near North Beach. Could occur at Lawsons Landing. Needs sand dunes, so is unlikely to occur on Project Area (G. Fellers, USGS, 2005).
<i>Danaus plexippus</i>	monarch butterfly	S3	Roosts in wind-protected tree groves with nectar and water sources nearby.	No	No	Common migrant through west Marin County area, with winter roost in Bolinas and Stinson Beach (NDDDB 2005).
<i>Haliotes chracerochii</i>	black abalone	FC; S3	Found in intertidal and shallow subtidal zones down to a depth of about 20 feet.	Yes	No	Range from Mendocino to southern California.
<i>Haliotes sorenseni</i>	white abalone	FE	Found in the subtidal zone down to at least 200 feet in open, exposed areas in Southern California.	No	No	Not found in Marin County (S. Allen, Seashore, 2001).
<i>Helminthoglypta arrosa williamsi</i>	William's bronze shoulderband snail	FSacS C	Found under brush and weeds.		No	Only known from Hog Island on lower slopes of island (NDDDB 2005).

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Scientific Name	Common Name	Status	Habitat	Habitat Present?	Species Present?	Comments
<i>Helminthoglypta nickliniana awania</i>	Nicklin's Peninsula Coast Range snail	FSacS C			No	Only known population in the Point Reyes Lighthouse vicinity (NDDDB 2005).
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	FSacS C	Ponds	Yes	No	Found in pond habitat in several northern California counties. Specimen from Bolinas collected in 1940 (NDDDB 2005).
<i>Icaricia icarioides ssp.</i>	Point Reyes blue butterfly	FSacS C	Lupine is host plant for larvae.	No	No	Distribution and abundance unknown, but 1992 surveys located this butterfly at Tomales Point and North Beach dunes (D. Adams, Seashore, 2001).
<i>Incisalia mossii bayensis</i>	San Bruno elfin butterfly	FE	Coastal mountains with grassy cover; sedum hostplant.	No	No	One occurrence reported at Dillon Beach, date unknown. Also known from Alpine Lake (NDDDB 2005).
<i>Incisalia mossii marinensis</i>	Marin elfin butterfly	FSacS C	Douglas-fir forest; sedum is host plant for larvae.	No	No	May occur in Douglas fir forest on Inverness Ridge (ARA et al. 2003).
<i>Ischnura gemina</i>	San Francisco forktail damselfly	Former FSC; S2	Frequents wetlands with emergent vegetation and ponds or slow-moving creeks.	Yes	Yes	Nearest recorded occurrence to Giacomini Ranch is directly north of Tomasiní Creek confluence with Tomales Bay at Railroad Point and terminus of Tomales Bay Trail (Hafernik and Mead 1992).
<i>Lichnanthe ursina</i>	bumblebee scarab beetle	FSacS C	Coastal sand dunes	No	No	Ranges from Sonoma to San Mateo Counties. Observed at MCI/RCA property in Park in summer 2000-2001. Total distribution and abundance within Park unknown (D. Adams, Seashore, 2001).

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Scientific Name	Common Name	Status	Habitat	Habitat Present ?	Species Present?	Comments
<i>Speyeria zerene myrtilae</i>	Myrtle's silverspot butterfly	FE	Dunes, scrub, and grasslands immediately adjacent to the coast.	No	No	Occurs in the coastal dunes of the Point Reyes Peninsula and observed near Dillon's Beach in 2003-2004 (NDDDB 2005).
<i>Syncaris pacifica</i>	California freshwater shrimp	FE	Lowland coastal perennial streams	Yes	Probably not present	Found primarily in Sonoma, Marin, and Napa counties. Observed in Walker, Keys, Lagunitas, and Olema Creeks. Location of most sightings on Lagunitas and Olema Creeks were upstream of Giacomini Ranch (Fong 2003), although reported as occurring in lower Lagunitas Creek adjacent to Ranch in 2000 (Pearson 2000). Surveys found no individuals in creek near Ranch (2002) or in Olema Marsh (2005), although were present upstream on Lagunitas and Olema Creeks (Fong 2003).

FEDERAL, STATE, AND CNPS STATUS CODES

**FEDERAL LISTING**

- FE = Listed as endangered under federal Endangered Species Act.
- FT = Listed as threatened under federal Endangered Species Act.
- FPE = Proposed for listing as endangered under the federal Endangered Species Act.
- FPT = Proposed for listing as threatened under the federal Endangered Species Act.
- FC = Proposed as candidate for listing under the federal Endangered Species Act.
- FD = Proposed for delisting under the federal Endangered Species Act. Undergoing 5-year monitoring program.
- FX = Critical Habitat designated for this species
- FSacSC = A Sacramento Fish and Wildlife Office Species of Concern (formerly a category 2 candidate for listing).

**STATE LISTING**

- SE = Listed as endangered under the California Endangered Species Act.
- ST = Listed as threatened under the California Endangered Species Act.
- SSC = Listed as a Species of Special Concern by the California Department of Fish and Game.

**NATURAL DIVERSITY DATABASE LISTING**

- S1 = Seriously endangered in California
- S2 = Endangered in California
- S3 = Restricted rang or rare in California
- S4 = Statewide population apparently secure, some factors exist to cause some concern.

**BIRD SPECIES OF SPECIAL CONCERN**

- BSSC1 = First Priority
- BSSC2 = Second Priority
- BSSC3 = Third Priority

**SPECIES WITH POTENTIAL TO BE AFFECTED CODES**

- NLAA = Not Likely to be Adversely Affected
- NE = No Effect

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#### Footnotes

1. Kelly, J. 2001, and Shuford W.D. and Ryan, 2000, references are from within ARA et al. 2003. These works were not independently consulted.
2. McCaskie et al., 1979, reference are from within CDFG: California's plants and animal Species Account . This work was not independently consulted.

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*Preliminary*

***Statement of Findings  
For Wetlands and Floodplains***



***Giacomini  
Wetland  
Restoration  
Project***

***Marin County,  
California***

Golden Gate National Recreation Area  
Point Reyes National Seashore  
California State Lands Commission

November 13, 2006

## ***Introduction***

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Since early 1900s, levees constructed at the southern end of Tomales Bay for roads and dairy farms have served to hydrologically disconnect Lagunitas Creek and its tributaries from their floodplains. Infrastructure such as levees, tidegates, and culverts, as well as intensive agricultural management, degraded the condition of wetlands in the Waldo Giacomini Ranch (Giacomini Ranch) and Olema Marsh and substantially reduced hydrologic and ecological functionality of what was once of the largest integrated tidal marsh complexes in Tomales Bay. Hydrologically connected, natural wetlands provide many important functions and services for humans and wildlife, including floodwater retention, water quality improvement, wildlife habitat and food supply, recreational opportunities, and support of mariculture and fisheries industries. Because two-thirds of Tomales Bay's freshwater inflow passes through the Project Area, these wetlands may have once played an integral role in maintaining health of Tomales Bay, which has deteriorated over the last century because of excessive sedimentation, water and sediment quality problems, non-native species invasions, and other issues.

In 2000, the Park Service acquired the Giacomini Ranch for the purpose of wetland restoration using a combination of Congressional appropriations and mitigation monies from the California Department of Transportation (CalTrans). The Giacomini Ranch is located in the county of Marin in the San Francisco Bay region in California (Figure 1). The Giacomini Ranch was incorporated into the northern district of the Golden Gate National Recreation Area (GGNRA), which is managed by Point Reyes National Seashore (Seashore). The Seashore also owns a small portion of the Olema Marsh. With this project, the Park Service and its state partner, the California State Lands Commission (CSLC), propose to restore natural hydrologic processes to a significant portion of the Giacomini Ranch and Olema Marsh, thereby promoting restoration of ecological processes and functions. The CSLC owns most of Lagunitas Creek within the Project Area.

The *Draft Environmental Impact Statement/Environmental Impact Report* (DEIS/EIR) evaluates four alternatives for restoring wetlands and wetland functionality and incorporating public access, as well as a No Action Alternative. Among the impact topics evaluated in the draft document are wetlands and floodplains. Executive Orders (EO) 11988 (Floodplain Management) and 11990 (Protection of Wetlands) require the Park Service and other federal agencies to evaluate the consistency of actions with policies on wetlands and floodplains and the likely impacts of actions on these resources. Park Service Director's Order #77-1: Wetland Protection and Procedural Manual #77-1 provide Park Service policies and procedures for complying with E.O. 11990, and Park Service Special Directive 93-4 (Floodplain Management Guideline) provides Park Service guidelines for compliance with E.O. 11988.

Under these guidelines, proposed new development or other new activities, plans, or programs that have the potential for direct or indirect adverse impacts on wetlands and floodplains must document that every effort has been made to avoid or minimize impacts to these resources. Actions proposed by the Park Service that have the potential to have adverse impacts on wetlands and floodplains will be addressed in an Environmental Assessment (EA) or an EIS.

If the preferred alternative in an EA or EIS will result in adverse impacts on wetlands and floodplains, a "Statement of Findings" (SOF) documenting compliance with this Director's Order and its implementation procedures will be completed.

Certain "water-dependent" actions may be excepted from the Statement of Findings requirement. For wetlands, this includes scenic overlooks and foot/bike trails or boardwalks; minor stream crossings using culverts or bridges that completely span the channel and associated wetland habitat; actions designed specifically for the purpose of restoring degraded (or completely lost) natural wetland, stream, riparian, or other aquatic habitats or ecological processes that cause less than 0.25 acres of loss; and maintenance, repair, or renovation of currently serviceable facilities or structures. For floodplains, excepted actions include archaeological structures, sites, or artifacts; picnic facilities, scenic overlooks, foot trails, and small associated daytime parking facilities; and certain emergency actions. This SOF documents compliance with these Park Service wetland protection procedures.

## ***Proposed Action***

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Of the five alternatives, Alternative C is the lead agencies' preferred alternative, because it best meets the purpose of restoring wetlands while also providing opportunities for public access that answer some of the local community's needs. Alternative C would involve several types of restoration, including discontinuation of agricultural management; removal of agricultural and hydrologic control infrastructure; tidal channel creation; partial creek realignment; revegetation; creation of alternate freshwater marsh habitat for a federally threatened amphibian species; creation of high-elevation high tide refugia habitat for federally and state-listed bird species; and revegetation of marsh, grassland, and riparian habitats. In addition, this alternative would result in construction of several new public access facilities, including a through-trail segment with a pedestrian-bicycle bridge over Lagunitas Creek, two spur trails; and several viewing areas and overlooks along the Giacomini Ranch perimeter.

This alternative would take approximately two to four years to construct, depending on the funding and implementation timeline for the public access component. Construction would require operation of numerous pieces of earthmoving equipment in the Project Area, as well as equipment and material stockpiling, during that period.

## ***Description of Wetlands Within Project Area***

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### **Extent of Wetlands**

While the project is intended to "restore" wetlands, more than 90 percent of the Project Area is already wetland. Wetlands within the Project Area are subject to oversight by several state and federal agencies, including the U.S. Army Corps of Engineers (Corps), the Park Service, the California Coastal Commission (CCC), the Regional Water Quality Control Board (RWQCB), and California Department of Fish and Game (CDFG). The extent of jurisdiction or oversight of wetlands by the Corps, the Park Service, and CCC can differ slightly among some of these agencies because of slightly different interpretations or definition of wetlands from a regulatory or oversight perspective. Based on the minimum number of parameters (hydrology, soils, and/or vegetation) required, the Corps and Park Service methodologies produce the most similar results and are, therefore, the ones presented below.

#### *Corps Jurisdiction*

The Corps regulates several types of activities in waters of the United States, which includes navigable waters, tributaries to navigable waters, special aquatic sites (e.g., wetlands), and areas that are "adjacent" to navigable waters. These waters are regulated under Section 404 of the Clean Water Act (40 CFR Section 328.3) or Section 10 of the Rivers and Harbors Act (33 U.S.C. 403). A wetland delineation was performed by the Seashore and verified by the Corps in 2005 (Parsons 2005; Figure 2). Based on this delineation, 536.6 acres of wetlands and waters subject to Section 404 jurisdiction under the Clean Water Act exist in the Project Area, with 249.3 of those acres also subject to Section 10 jurisdiction under the Rivers and Harbors Act (Parsons 2005).

#### *Park Service Oversight*

Director's Order #77-1 established Park Service policies, requirements, and standards for implementing Executive Order 11990, which directs federal agencies to avoid long- and short-term impacts to wetlands. The Park Service uses the Cowardin classification system (Cowardin et al. 1979) as the basis for creating a Park Service standard for defining, classifying, and inventorying wetlands that might be subject to adverse impacts and Park Service oversight.

Park Service lands within the Delineation Study Area generally include the Giacomini Ranch and portions of Bear Valley Creek upstream of Bear Valley Road and the southern 14.0 acres of Olema Marsh. Wetlands potentially subject to management and oversight by the Park

Service were delineated using the Cowardin wetland delineation definition developed by the USFWS (Parsons et al. 2005). This definition relies on the presence of two of three criteria – wetland hydrology and hydrophytic vegetation or hydric soils – to classify areas as wetlands. Because of the similarity of this approach to that of the Corps, the Seashore proposed to delineate these wetlands by modifying, if necessary, the boundary line proposed for potential Corps' jurisdiction to incorporate areas that met two, but not necessarily all three, criteria (Parsons et al. 2005).

After reviewing information collected during the delineation, there did not appear to be any areas that would require expansion of the Corps' potential jurisdictional boundary (Parsons et al. 2005). There were some areas that technically only met two of the criteria, but most of these areas qualified as Corps' wetlands, as well, because wetland hydrology and hydrophytic vegetation were present, and the absence of hydric soil indicators could be explained by the fact that soils were fill, recently disturbed, or alluvial and therefore less likely to display obvious hydric soil indicators. Therefore, wetlands potentially subject to management and oversight by the Park Service in the Project Area total 446.4 acres.

### **Hydrogeomorphic Classification of Wetlands**

Within the wetland regulatory and management community, there has been a strong push in recent years to classify wetlands not only according to vegetation type and structure such as freshwater marsh or salt marsh, but on hydrogeomorphology. Naturally, regional variations exist in the specific types of hydrogeomorphic features present, but most wetlands share some basic hydrologic and geomorphic attributes that enable them to be classified, on at least a basic level, by a methodology developed by Brinson (1993). The Project Area incorporates at least five different hydrogeomorphic classes of wetlands, including Estuarine Fringe; Slope Wetlands; Groundwater Slope Wetlands; Riverine Wetlands; and Organic Soil Flats. Because of the hydrologic complexity within the Project Area, a considerable amount of overlap occurs between these geomorphic classes.

Estuarine Fringe Wetlands are comprised of tidal wetlands in the undiked marsh north of the Giacomini Ranch, as well as the narrow fringe of undiked marsh on the outboard of the Giacomini Ranch levees and some of the islands or topographically elevated "central bars" in the middle of Lagunitas Creek. The entire Project Area could be classified as Riverine Wetlands, which include floodplains and riparian areas along rivers, creeks, and streams, although a large portion of the Riverine Wetlands for Lagunitas Creek and Tomasini Creek have been eliminated or minimized through levees that greatly reduce the amount of overbank flooding. Only Fish Hatchery Creek, Bear Valley Creek, and some of the small drainages flowing off the Inverness Ridge are hydrologically connected with their floodplains, although hydrologic functioning of these creeks has also been negatively impacted by culverts, road levees, ditching, and frequent dredging.

With levees reducing the amount of overbank flooding, most of the Giacomini Ranch could be classified as functioning more as Slope Wetlands, with surface runoff and precipitation generally sheetflowing from the higher-elevation southern portions of the two pastures towards the lower-elevation northern portions, where waters drain out either through one-way or modified one-way tidegates or over concrete spillways. Some of the surface run-off derives from groundwater that emerges at the base of the Inverness Ridge or Point Reyes Mesa and flows into the two pastures. This abundant groundwater creates groundwater slope wetlands or, as they have been referred to in other areas of the country, "seepage toeslope" wetlands on the perimeter of both the West and East Pastures. In the West Pasture, the western perimeter is at a higher elevation than most of the rest of the pasture, encouraging sheetflow of this emergent groundwater into the center of the pasture, except where there are depressional basins such as in the extensive freshwater marsh along Sir Francis Drake Boulevard. The Point Reyes Mesa appears to support both seepage toeslope wetlands, as well as localized areas of hillside seepage slope wetlands, which manifest themselves as extensive arroyo willow forests or Mesic Coastal Scrub on the face of the Point Reyes Mesa bluff. In the East Pasture, the influence of these seeps creates more localized seepage toeslope features,

because the perimeter elevation is flatter and more consistent with elevations in the center of the pasture.

### **Classification of Wetlands**

For purposes of compliance with Executive Order 11990, parks are directed to use the "Classification of Wetlands and Deepwater Habitats of the United States" (FWS/OBS-79/31; Cowardin et al. 1979) as the standard for defining, classifying, and inventorying wetlands. The Cowardin classification system is also the basis for the National Wetland Inventory (NWI) maps of wetlands and waters prepared by the USFWS for the entire United States. As part of the CCC delineation, a classification of all wetlands types was conducted. Summarized below are some of the major findings.

**System/Subsystems (Parsons et al. 2005).** Because of its location at a major freshwater-estuarine confluence, the Project Area is a combination of Palustrine (freshwater) and Estuarine (saltwater) wetlands and Riparian non-wetlands. Estuarine Systems are those in which salinities during the period of average annual low flow exceeds 0.5 ppt (Cowardin et al. 1979). Areas mapped as Estuarine included not only undiked, tidal areas such as Lagunitas Creek and the undiked marsh north of Giacomini Ranch and Lagunitas Creek, but even some areas inside dikes such as the Giacomini Ranch West and East Pastures, Tomasini and Fish Hatchery Creeks, and Olema Marsh. Estuarine influence in these areas results either from tidal surface flow muted to some degree either naturally or by improperly functioning tidegates (Olema Marsh; Fish Hatchery Creek/northern portion of Giacomini Ranch West Pasture; Tomasini Creek) or from indirect tidal interaction with the saline groundwater table. The elevated salinities observed in the diked pastures' groundwater tables probably derive from residual marine salts deposited in underlying estuarine sediments when these areas were open to tidal flushing (KHE 2006). Most of the mapped Estuarine areas consisted of the Intertidal Subsystem (2), but the Subtidal Subsystem (1) did occur in Lagunitas Creek, the northern portions of Fish Hatchery and Tomasini Creeks, and some diked portions of old sloughs in the Giacomini Ranch.

Because of the extensive tidal influence at the northern end of the Project Area, Palustrine Systems dominate the southern end, particularly Olema Marsh, Bear Valley Creek, and the southern end of the Giacomini pastures. In the northern end of the Project Area, Palustrine areas are relegated to the fringes of the Giacomini Ranch on higher gradient sections of creeks such as Tomasini and Fish Hatchery and small drainages and higher elevation areas adjacent to seeps flowing off the Inverness Ridge or Point Reyes Mesa. Often a sharp juxtaposition exists between Palustrine and Estuarine wetlands, as evidenced by the West Pasture freshwater marsh or Palustrine Emergent marsh polygon (e.g., PEM1Eb) adjacent to Sir Francis Drake Boulevard that is bordered by an Estuarine Emergent (E2EM1R) Diked Tidal Salt Marsh polygon with summer groundwater salinities as high as 50 ppt. There are no Palustrine Subsystems.

Some areas on the upland perimeter of the Project Area were mapped as the NWI's new Riparian (Rp) System category. Riparian (Rp) Systems support Scrub Shrub or Forested Class hydrophytic vegetation, but lack wetland hydrology. This category is not wetlands and, therefore is not subject to Corps' jurisdiction or the Park Service's oversight, although areas on state, county, and private lands may fall under jurisdiction by CDFG (Lake and Streambed Alteration Agreement). Acreage of non-wetland Riparian Systems within the Project Area totaled 55.1 acres, with 37.9 of those acres occurring in the Giacomini Ranch (Table 12). Most areas within the Project Area that qualified as Riparian (Rp) are Intermittently (J) or Temporarily Flooded (A) in which flooding occurs only at peak storm flow discharge or for several days following peak discharge or flooding occurs only an episodic basis (i.e., recurrence interval > 2 years). These Riparian Systems are dominated by deeply rooted riparian tree and shrub species -- many of which are considered hydrophytic at least in their seedling and juvenile stages -- that typically rely on groundwater tables that are greater than 12 inches from the soil surface. All of the Riparian System areas were mapped as Lotic (1) or flowing water Subsystems, because they occurred at the periphery of freshwater streams, creeks, drainages, or actively flowing seeps.

***Class/Subclass (Parsons et al. 2005).*** Most of the Project Area is dominated by low-growing Emergent (EM), Persistent (1) plant species such as pastoral, salt marsh, and ruderal forbs and herbs. Areas with taller vegetation (Scrub Shrub or Forested) tended to occur outside the Giacomini Ranch or on its perimeter due the lack of grazing and/or higher quantities of freshwater from seeps and drainages and creeks. As with Aquatic Bed, the areal extent of the Scrub Shrub class was relatively low within all regions of the Project Area. The Forested Class was the dominant class in the portion of Bear Valley Creek within the Project Area and the second highest class in the White House Pool and Green Bridge County Park and Olema Marsh areas. Unconsolidated Bottom subclasses within the Project Area consisted largely of Cobble-Gravel (1), Sand (2), Mud (3), and Organic (4). Mineral soils (Subclasses 1-3) dominated most of the Project Area, but a combination of Organic and Mud sediments occurred in some of the unvegetated portions of Olema Marsh.

## **Functionality and Condition of Wetlands**

In order to achieve protection of these ecosystems, the Park Service has been directed to “conduct or obtain parkwide wetland inventories to help ensure proper planning with respect to the management and protection of wetland resources” (NPS 2006, Section 4.6.5). Beginning in 2000, the Seashore initiated an enhanced wetlands mapping project. During the first two phases of the project, more than 911 acres within 230 wetlands polygons or areas were inventoried and mapped. In 2003, the Seashore began a third phase of the wetlands mapping project that focused on the 140,094-acre Tomales Bay watershed. As one of the larger landowners within the Tomales Bay watershed, the Park Service felt that it could contribute to improving water quality within Tomales Bay by identifying potential pollutant sources on its lands and targeting degraded wetlands for restoration (Parsons et al. 2004). In order to evaluate the condition of existing wetlands and how well they are currently functioning, the Seashore recognized that it needed to expand its mapping efforts to incorporate a condition and functional assessment of wetlands.

A number of different methodologies exist for assessing wetland condition and/or functions, but, ultimately, the Seashore created a hybrid assessment methodology that incorporated components from several methodologies, including the recently developed California Rapid Assessment Methodology (CRAM; Collins et al. 2003; 2004). This assessment methodology uses indicators or metrics of wetland condition or functionality based on observable impairments or disturbances to hydrologic processes, hydrologic functions, landscape connectivity, soils, vegetation communities, and ecological functions such as wildlife habitat, as well as qualitatively ranking the number and intensity of potential “stressors” to wetlands such as grazing, contamination, etc. (Parsons et al. 2004).

As part of this functional assessment, more than 1,500 acres and 717 polygons of wetlands were mapped within the western portion of Tomales Bay and Olema Valley (Parsons et al. 2004). Using a semi-quantitative evaluation of scores for both functionality and stressors, sites were ranked as being either high or medium priority for more detailed future evaluation of condition and functionality and possible future restoration. A large percentage of the sites or Functional Units that were considered either high or medium priority for restoration occurred in specific areas of the watershed, including the Waldo Giacomini Ranch in the southern portion of Tomales Bay and the Bear Valley Creek subwatershed (Parsons et al. 2004). In fact, of the six high priority restoration “sites” or drainage areas identified in the Tomales Bay-Olema Valley watershed, three of them were on the Giacomini Ranch, specifically the eastern portions of the East Pasture-Tomasini Creek, the leveed portion of Lagunitas Creek, and the diked northern portions of the East and West Pasture (Parsons et al. 2004). Intensive agricultural and/or hydrologic management of Giacomini Ranch and Olema Marsh has degraded conditions within both of these former tidal marshes. In addition, the lack of hydrologic connectivity of the Giacomini Ranch and, to a lesser degree, Olema Marsh, with Lagunitas Creek and other drainages severely reduces the ability of these wetlands to serve functions such as floodwater retention and storage, water quality improvement, carbon export, and wildlife habitat for marine and estuarine aquatic species that might utilize tidally connected wetlands for foraging, breeding, and refugia.

## ***Description of Floodplains Within Project Area***

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### **Extent of Floodplains and Flood Frequency**

Situated in an alluvial valley at the confluence of at least three moderate to large-size creeks and a number of smaller drainages, it is perhaps not surprising that the entire Project Area has been mapped within the FEMA-designated 100-year flood hazard zone (Clearwater Hydrology and Nichols-Berman 2002). The extent of the 500-year flood hazard zone was not delineated in the Point Reyes area (Clearwater Hydrology and Nichols-Berman 2002). The history of the Project Area has been one that has marked by a number of catastrophic floods that have caused extensive to homes, ranches, and roads, as well as substantially changed the physical environment. Within the Project Area, flooding is directly influenced by both tidal and watershed processes, with flooding from creeks often exacerbated by extreme tide conditions. However, during normal to high tide conditions, tidal flooding of floodplains within the Project Area has largely been precluded by the presence of levees along Lagunitas Creek and Tomasini Creek and across the mouth of Bear Valley and Olema Creeks.

While major flooding events remain the most memorable in terms of extent of inundation and damage, hydraulic modeling conducted as part of the proposed projects suggests that the Project Area and vicinity floods frequently, even during lesser storm events. Active floodplains – or areas subject to frequent flooding during bankfull or ordinary high water flows that recur every 1.5 years on average – occur principally within the streambeds of creeks such as Lagunitas Creek, Bear Valley Creek, Tomasini Creek, Fish Hatchery Creek, and some of the other smaller drainages that flow into the Project Area. Model simulation results indicate that Giacomini Ranch East Pasture levees start to overtop from higher flows on Lagunitas Creek during 3.5-year flood events, while the West Pasture levees do not overtop until flooding reaches levels consistent with 12-year flood events (KHE 2006). Lagunitas Creek is the principal source of flooding in the Project Area, but not the only one. Bear Valley and Olema creeks and smaller drainages on the Inverness Ridge often play a large -- and perhaps even larger role -- in flooding of Levee Road and Sir Francis Drake Boulevard and properties along these roads.

## ***Impact to Wetlands and Floodplains Within Project Area***

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### **Wetlands**

Alternative C would result in approximately 1.74 acres of wetland loss from fill used to create a high tide refugia for special status species in the West Pasture and a low refugia berm adjacent to the created Tomasini Triangle freshwater marsh in the East Pasture (Figure 3). In the West Pasture, a section of the existing levee would be extended slightly northward and widened to provide high tide refugia for the federally and state endangered California clapper rail (*Rallus longirostris obsoletus*) and state threatened California black rail (*Laterallus jamaicensis coturniculus*). A low berm would also be created in the East Pasture to enhance the duration and extent of ponding in the created Tomasini Triangle freshwater marsh for the federally threatened California red-legged frog (*Rana aurora draytonii*), which breeds in freshwater marshes that pond through July or August. Also, it would provide some refugia for wildlife during high tide and floodwater conditions.

There would also be some potential permanent fill of wetlands and removal of riparian habitat associated with the potential future extension of the southern perimeter trail to Inverness Park through possible widening of the Sir Francis Drake Boulevard road berm. The level of impact with berm widening would vary depending on final design, but impacts would be expected to minor to moderate unless the trail was placed instead on a boardwalk through the West Pasture. As compliance for this component would be conducted through a possible future project conducted jointly with the County, potential impacts to wetlands are not addressed here.

Certain types of actions cannot accomplish their intended purposes unless they are located in or are carried out in close proximity to wetlands (i.e., they are "water dependent"; NPS #77-1 Procedural Manual). Several other types of actions are not water dependent but, in general, are considered to have minimal impacts on wetlands (NPS Wetlands Procedural Manual). These actions may be **excepted** from the Statement of Findings procedures. One of the excepted types of actions are those designed specifically for the purpose of **restoring** degraded (or completely lost) natural wetland, stream, riparian, or other aquatic habitats or ecological processes. For purposes of this exception, "restoration" refers to reestablishing environments in which natural ecological processes can, to the extent practicable, function at the site as they did prior to disturbance. Temporary wetland disturbances that are directly associated with and necessary for implementing the restoration are allowed under this exception (see "conditions" in Section 4.2.A.2).

Actions causing a cumulative **gross** total of up to 0.25 acres of new long-term adverse impacts on natural wetlands may be allowed under this exception if they are directly associated with and necessary for the restoration (e.g., small structures or berms). Because construction of the berms and refugia under Alternative C would impact more than 0.25 acres of wetlands, a Statement of Findings is required for this proposed project if Alternative C was ultimately chosen for implementation. Temporary impacts to wetlands during construction caused by stockpiling of equipment and materials would be an excepted action, because they are necessary for implementing restoration.

## **Floodplains**

Alternative C would include construction of the southern perimeter through-trail, including a new pedestrian-bicycle bridge across Lagunitas Creek. The approximately 2,750-foot enhanced trail from the Giacomini dairy facility would lead to construction of a 200-foot-long, 8-foot-wide bridge on Lagunitas Creek at the location of the old summer gravel dam that the Giacomini used to install for irrigation purposes. The bridge would be constructed at a relatively narrow portion of the Lagunitas Creek channel, which would enable the Park Service to construct the bridge such that none of the footings would be within the active floodplain. The bridge, however, would be within the 100-year floodplain, as would all of the other trail facilities constructed. Bridge construction would represent, then, approximately 1,600 square feet of Class I development within the 100-year floodplain. Trails would be developed and maintained with the assumption that they would be flooded on a regular basis and would be constructed accordingly in terms of construction materials and methods. Therefore, trails are not included within development totals.

The bicycle-pedestrian bridge would be constructed to accommodate flows equal to or greater than the Green Bridge, which is located directly immediately upstream. Design elevations for the bridge would take into account reductions in vertical flood elevations in Lagunitas Creek with removal of the Lagunitas Creek levees under Alternative C. Based on hydraulic modeling analyses, the portions of Levee Road directly adjacent to White House Pool County Park and Olema Marsh would have reductions in vertical flood elevations ranging as high as 0.6- to 1.1 feet during 10-year flood events (KHE 2006). As a result, under restored conditions, elevation of the bridge would only need to exceed 15 feet NAVD88 to allow for conveyance of 10-year flood flows and 17 feet NAVD88 to allow for conveyance of the 50- and 100-year flood flows at the proposed location (KHE 2006). The bridge would likely be designed to have at least 1- to 2-feet of freeboard. Using this type of approach, hydraulic modeling results suggest that the bridge would not have more than negligible adverse impacts on flooding in the Project Area.

## ***Justification for Impacts to Wetlands and Floodplains and Potential for Avoidance or Minimization of Impacts***

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### **Wetlands**

While restoring wetlands would benefit numerous wildlife species, many species require nearby refugia or high-elevation upland areas as refuge during extreme tide or high water

conditions. Within the Project Area, some of the species most affected by the presence and extent of high tide refugia are the California black rail and California clapper rail, both of which are marsh species that are relatively poor fliers. Currently, California black rail in the undiked marshlands north of the Giacomini Ranch use the Giacomini Ranch levees as high tide refugia, because many of the natural uplands on the perimeter of Tomales Bay have been developed for homes, roads, businesses, and other uses.

The preferred alternative, Alternative C, would involve complete removal of levees in the West and East Pasture, except for most of the Tomasini Creek levee and a small section of the Lagunitas Creek West Pasture levee. The levee section at the northernmost end of the West Pasture adjacent to the undiked marshlands would be retained as refugia for rails and expanded northward to transition into the natural alluvial levee already present in the undiked marshlands. It would also be widened slightly at the location of the existing levee to increase the amount of high-elevation refuge available. (A small portion of the section that would be retained has already been widened under a separate habitat enhancement project conducted in 2006.)

Further widening of the existing levee and expansion of the levee northward would impact 0.07 acres of existing Corps' jurisdictional wetlands. This impact cannot be minimized for two reasons. First, the refugia needs to be located fairly close to marsh currently used by black rails, because they are relatively poor fliers. Secondly, most of the northern portion of the West Pasture is already wetland, except for the levees and some areas at the toe of the levee. Where possible, the footprint for levee widening would try to minimize the amount of jurisdictional wetlands affected.

As impacts cannot be minimized, the only other option would be avoidance. Under Alternative A, the West Pasture levees are not removed or breached, so there is no proposal to either expand or widen a section of levee. However, retention of the West Pasture levees also limits the ability of Alternative A to fully meet the purpose and objectives of restoring a significant portion of the Project Area.

Under Alternative C, a low berm would also be constructed on the westward perimeter of the created Tomasini Triangle freshwater marsh. This berm would serve several purposes. It would increase the extent and duration of ponding within the created marsh, which is crucial to breeding success for California red-legged frogs. The created marsh would receive inflows primarily from surface water run-off, groundwater inflow, and precipitation, so the berm would ensure sustained ponding through preventing outflow of perched surface waters. The berm would also preclude tidal influence during anything but the most extreme storm tides. Lastly, it would provide a high elevation upland area for use as refuge by wildlife within the otherwise low-elevation marsh floodplains during extreme tide or high water conditions.

As with the West Pasture, most of the East Pasture is wetland, with the exception of the southernmost portions of the pasture. The created marsh was deliberately situated in an area with a small watershed and seasonal to perennial groundwater inflow contribution to ensure that the proper hydrology is present for breeding of California red-legged frog. There are no non-jurisdictional or upland areas in the vicinity of the created marsh in which the berm could be located to avoid or minimize impacts to wetlands. The only option for avoidance would be under Alternative A, where the Tomasini Triangle freshwater marsh and associated berm would not be created. The Tomasini Triangle freshwater marsh is not included in Alternative A, because retention of levees in the West Pasture would reduce potential impacts to existing freshwater breeding habitat. However, as noted above, the scope of restoration under Alternative A is also considerably reduced, limiting the ability of Alternative A to fully meet the proposed project's purpose and objectives.

## **Floodplains**

One of the objectives of the proposed project is to provide the public the opportunity to experience and enjoy the restored wetland through providing public access opportunities that do not impact wetland function. The proposed location for the pedestrian-bicycle bridge

incorporated into the southern perimeter trail was selected by the Park Service and CSLC, because it: 1) represents one of the narrowest sections of the Lagunitas Creek channel in the Project Area and therefore enables construction of the bridge without having to place footings within the active floodplain; 2) allows direction connection of the enhanced existing trail on the Giacomini Ranch East Pasture levee to the existing trail in the White House Pool County park; and 3) minimizes the amount of riparian habitat that would have to be removed on either end of the bridge, because there are already gaps in the riparian canopy.

As the entire Project Area is located within a 100-year FEMA-designed floodplain, it would not be practicable to avoid floodplain impacts by relocating the southern perimeter trail and bridge to another non-floodplain area within or immediately adjacent to the Project Area. Under Alternative D, the southern perimeter trail would be converted from a through-trail to a spur trail through elimination of the bridge component. This would eliminate impacts to floodplains within the Project Area. While this alternative would still enable the proposed project to meet its objective of providing public access opportunities that allow the public to experience and enjoy the restored wetland, it would decrease its ability to meet needs voiced by members of the local community during scoping for more connectivity between communities and existing public access facilities.

As noted earlier, the Park Service and CSLC have attempted to minimize impacts to active floodplains by ensuring that the bridge is sited in a location where footings would not need to be placed in an active floodplain.

## ***Mitigative Actions***

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### **Wetlands**

Under the preferred alternative, Alternative C, losses of wetlands from creation of berms and high tide refugia would be offset by creation of approximately 18.8 acres of wetland in the Giacomini Ranch through 1) complete levee removal; 2) restoration of filled and compacted ranch roads; and 3) excavation of spoil piles, berms, manure disposal areas, and upland areas, resulting in a net gain of approximately 17 acres of wetlands. Most of the wetland gain in the Giacomini Ranch would come from an increase in estuarine wetlands. While the percentage increase in palustrine wetlands would be smaller than that of estuarine wetlands, it would be sufficient to offset loss of 1.74 acres of palustrine wetlands and would, therefore, represent in-kind mitigation.

In addition, a small increase in wetland acreage would also result from excavation of approximately 2 acres of upland grassland in the Olema Creek watershed to create emergent wetland and open water aquatic habitat as mitigation for impacts to California red-legged frog habitat in Olema Marsh.

Overall, then, permanent loss of 1.74 acres of wetland from construction of high-tide refugia would be offset by passive and active restoration, resulting in a net gain of more than 19 acres. These mitigative actions would result in an overall 11:1 mitigation ratio.

### **Floodplains**

Generally, the Park Service stipulates that the mitigation should provide protection up to the level of the applicable regulatory floodplain (NPS Floodplain Procedural Manual Section VI.G.). Mitigation may consist of any combination of seasonal closure, structural flood protection measures, specific actions to minimize impacts to floodplain natural resource values, effective flood warning, and flood evacuation (NPS Floodplain Procedural Manual Section VI.G.). As noted earlier, the bridge would be designed to minimize impacts to floodplain resources by ensuring that no footings are placed in the active floodplain. During extreme storm events that would cause overtopping of the bridge, the bridge would be posted as closed if Park Service personnel can reach the structure without endangering their own safety. In the event of catastrophic flooding, it would be highly unlikely that pedestrians and bicyclists would

attempt to use the bridge, because most of the access points to the trail would be inaccessible.

## ***Compliance***

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Because the proposed project would affect wetlands and floodplains, the Park Service and CSLC would have to comply with a number of federal, state, and local laws and regulations governing impacts to wetlands, floodplains, and other aquatic habitats.

***Clean Water Act Section 404.*** Section 404 (33 U.S.C. 1344) of the Clean Water Act prohibits the discharge of fill material into navigable waters, tributaries to navigable waters, and special aquatic sites of the United States, including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers (the Corps) and U.S. Environmental Protection Agency. The proposed project would involve removal or breaching of levees on creeks, realignment of creeks, and excavation and/or permanent or temporary fill in special aquatic sites such as wetlands. Because of this, the project will require Section 404 permits from the Corps. The Corps has already reviewed and verified the delineation of jurisdictional wetlands and other waters in the Project Area.

***Clean Water Act Section 401.*** Under Section 401 (33 U.S.C. 1341) of the Clean Water Act, states and tribes can review and approve, condition, or deny all Federal permits or licenses that might result in a discharge to state or tribal waters, including wetlands. The proposed project has the potential to affect water quality within the Project Area and in downstream water bodies. Because of this, the project will require Section 401 certification from the San Francisco Regional Water Quality Control Board.

***Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. §43).*** Predating Section 404, federal jurisdiction over activities to navigable U.S. waters was limited to “waters” subject to Section 10 of the Rivers and Harbor Act (1899). The Corps continues to oversee Section 10 jurisdictional waters, which are navigable waters that are subject to the ebb and flow of the tide, and/or those that are presently used, have been used in the past, or could be used for interstate transport or foreign commerce. Section 10 jurisdiction extends to mean high water (MHW) and includes tidal areas presently subject to tidal influence, as well as unfilled areas currently behind levees that were historically below MHW. The proposed project would involve removal or breaching of levees, portions of which are currently below MHW, and potentially excavation of tidal creeks in areas that were historically below MHW. Applications for a Section 10 permit would be submitted to the Corps concurrently with the Section 404 permit.

***Coastal Zone Management Act of 1972, as amended through P.L. 104-150, The Coastal Zone Protection Act of 1996 (16 U.S.C. §1451 et seq.).*** Within California, the California Coastal Commission (CCC) administers the state program (California Coastal Act) for implementation of the federal Coastal Zone Management Act (CZMA). Any action by a federal agency such as the Park Service requires a federal consistency determination by the CCC as required by CZMA. The CCC manages fill, dredge, and other non-point activities affecting wetlands. In California, the Coastal Zone is broken into Local Coastal Program units that specifically oversee land use and management of resources within their jurisdiction. This project falls within the Coastal Zone and has wetlands and riparian/stream buffer areas that would be subject to oversight under the Coastal Act and local LCP. The Park Service would make a determination regarding consistency and submit to the CCC for concurrence.

***Porter-Cologne Act (California Water Code, Division 7, §13000).*** The Porter-Cologne Act is the principal state law governing water quality control in California. The Regional Water Quality Control Boards (RWCCB), which also administer Section 401 of the federal Clean Water Act, govern the nine hydrologic regions into which California is divided, adopting regional water quality control plans (basin plans) for their respective regions. Water quality control plans designate beneficial uses of water, establish water quality objectives to protect those uses, and provide a program to implement the objectives. The San Francisco RWQCB has established beneficial uses and associated water quality criteria for Tomales Bay and Lagunitas

Creek. The portion of Lagunitas Creek that runs through the Project Area is owned and managed currently by the CSLC.

***Lake and Streambed Alteration Agreement (Fish and Game Code, §1600 et seq).***

Any person, state or local governmental agency, or public utility must notify the California Department of Fish and Game (CDFG) before beginning an activity that will substantially modify a river, stream, or lake. CDFG has historically had a more limited jurisdiction than the Corps, focusing specifically on lakes, major tidal sloughs, rivers, and streams. CDFG also typically includes riparian areas adjacent to rivers and streams within its jurisdiction. Because the proposed project would affect creeks under state ownership, a Lake and Streambed Alteration Agreement may be required.

## ***Conclusion***

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While the purpose of the proposed project is wetland restoration, there would be impacts to wetlands and floodplains associated with construction of low berms, upland refuge areas for wildlife, and bridges for public access. The total acres of wetlands permanently impacted would exceed 0.25 acres, so the proposed project would not meet requirements for an exception to preparation of a Statement of Findings despite the fact that the actions are “designed specifically for the purpose of **restoring** degraded (or completely lost) natural wetland, stream, riparian, or other aquatic habitats or ecological processes” (NPS Wetlands Procedural Manual, Section 4.2.A.1.e). The proposed project would also involve placement of a bridge in a FEMA-designed 100-year flood hazard zone, which is considered a Class I action under Park Service floodplain management procedures and therefore also subject to Statement of Findings requirements. An alternative has not been formally chosen for implementation, but the Park Service and CSLC have chosen Alternative C as the preferred alternative in the draft EIS/EIR. Therefore, this document represents a Preliminary Statement of Findings for Wetlands and Floodplains.

The Park Service and CSLC believe that there are no practicable alternatives to permanent loss of 1.74 acres of degraded palustrine wetlands and 1,600 square feet of Class I development in the FEMA-designated 100-year floodplain. In designing Alternative C, the Park Service and CSLC strived to avoid impacts to wetlands and floodplains, particularly as the purpose of the proposed project is to restore natural wetland hydrologic and ecological processes and functions to a significant portion of the Project Area.

Wetland impacts that cannot be avoided are minimized by trying to locate the construction footprint for small berms and refugia in non-jurisdictional or upland areas to the extent possible. Wetland impacts that cannot be avoided or minimized would be mitigated at approximately an 11:1 ratio, with loss of 1.74 acres of degraded palustrine wetlands replaced in-kind with higher quality and better functioning restored palustrine wetlands. There would also be temporary impacts to wetlands from stockpiling of construction equipment and materials, but these impacts would be “directly associated with and necessary for implementing the restoration” and can therefore be excepted as described under Section 4.2.A.1.e.

Floodplain impacts that cannot be avoided are minimized by locating the bridge in one of the narrowest sections of the Lagunitas Creek channel so that footings can be placed outside of the active floodplain and designing the bridge elevation high enough to allow for unimpeded conveyance of larger flood flows. Floodplain impacts that cannot be avoided or minimized would be mitigated to the extent practicable by closing the structure during extreme flooding, although posting of closure signs may ultimately depend on the ability of Park Service staff to safely access this area during flooding.

In general, the purpose of the proposed project fully meets the Park Service directive to restore wetlands and floodplains. The proposed project would directly comply with Park Service policy to restore wetlands to pre-disturbance conditions, when natural wetland

characteristics or functions have been degraded or lost due to previous or ongoing activities (NPS Wetlands Procedural Manual, Section 2.2.G). Alternative C would be consistent with the Park Service policy of no net loss wetlands in that there would be a net gain of approximately 19 acres of estuarine and palustrine wetlands from removal of levees, restoration of filled and degraded ranch roads, removal of spoil piles and other earthen fill, and creation of freshwater marsh ponds (NPS Wetlands Procedural Manual, Section 2.2.A). It would also meet Park Service directives to “restore natural floodplain values previously affected by land use activities within floodplains” and to “avoid ...floodplain development and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks” (NPS Floodplain Procedural Manual, Section II). Lastly, one of the objectives of the proposed project is to incorporate opportunities for public enjoyment and education through public access that do not disrupt natural wetland functions, which meets another Park Service directive (NPS Wetlands Procedural Manual, Section 2.2.H).

The Park Service, therefore, finds that the proposed project is in compliance with Executive Order 11990: “Protection of Wetlands” and Executive Order 11998: “Floodplain Management.”

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